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Wisconsin Paper Mills To Spend $7,500,000

Improvements Will Bring State's Paper Production To Record Peak This Year—Kimberly-Clark Recognize Employees Independent Union As Sole Bargaining Agent — Must Make Efforts To Reduce Wastes In River.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., August 16, 1937 — With the total expenditures for expansion and improvement of Wisconsin paper mills estimated at $7,500,000 for the current year, manufacturers see a possible high production peak of 1,000,000 tons this year with an approximate value of $75,000,000. Idle pulp mills have attracted new capital and are being put back into production along with suspended paper mills to supply the shortage of raw material and take advantage of the present favorable market.

Only two Wisconsin mills are reported idle at the present time, the Union Bag and Paper Company's plant at Kaukauna, Wis., at which production has been adandoned because of obsolescence, and the Outagamie Paper Company mill of the Patten Paper Company, Ltd., also of Kaukauna, abandoned during the Patten receivership and reorganization.

Mills which have been placed back in production include: Falls Pulp and Paper Company, Oconto Falls, Wis., a new company which purchased the Continental Paper and Bag Corporation's idle plants; Tomahawk Pulp Company, newly organized to lease the pulp mill of the Tomahawk Power and Pulp Company at King's Dam, Tomahawk, Wis., and the Ward Paper Company, which was formed to purchase the Grandfather Falls Paper Company.

Kimberly-Clark Corporation's expansion program is the greatest, and is centered largely at the Lakeview mill at Neenah, Wis. This program will amount to approximately $4,000,000, as previously reported in these columns. Consolidated Water Power and Paper Company is spending $1,500,000 at its Wisconsin Rapids and Biron, Wis., mills. Marathon Paper Mills is making $250,000 worth of improvements at its Menasha, Wis., division.

Among other mills which have reported improvements are: Flambeau Paper Company, Park Falls; Wausau Paper Mills Co., Brokaw; Riverside Paper Corporation and Appleton Coated Paper Company, Appleton, Mosinee Paper Mills Co., Mosinee, and Manufacturers' Box Company, Milwaukee.

Recognizes Employees Independent Union

Kimberly-Clark Corporation has given recognition to the Employees' Independent Union as the sole bargaining agent. A contract was signed at its main offices at Neenah, Wis., last week by which all negotiations for the workers will be handled by the union through its attorney, George A. Burns of Milwaukee, Wis.

Organization of the union was started at the Kimberly, Wis., mill and was carried through to all of the company's mills. Each has a committee to handle its local affairs, and from these committees representatives are elected to a central committee which negotiates with the company. Officers have been chosen by the central committee as follows: Harold G. Fird of the Kimberly, Wis., mill, president; Mitchell Johnson, Badger-Globe mill, Neenah, Wis., vice-president; Ames Green, Niagara, Wis., mill, secretary; and George Ritten, Atlas Mill, Appleton, Wis., treasurer. Other members of the central committee are: Kenneth Robinson, Badger-Globe mill; Howard Engel, Lakeview mill, Neenah, Wis.; Stanley Kulak, Niagara Falls, N. Y., mill; and Otto Hannemann, Kimberly, Wis., mill.

A meeting of the committee and Attorney Burns with the management is scheduled August 20 to bargain for labor contracts.

Another employees' union organized in the state has been denied recognition by the Wisconsin Labor Relations Board. It was organized among workers of the Minnesota Mining and Manufacturing Company, Wausau, Wis., makers of abrasive papers. A hearing was held July 20 on the application, and the decision was announced by Norman M. Clapp, labor board official, based on its findings. The plant employs 115 hourly workers.

Irvin Kersten Addresses Safety Meeting

Irvin Kersten, superintendent of the finishing room at the Kimberly-Clark Corporation's mill at Kimberly, Wis., was the speaker at the monthly safety meeting last week, attended by 300 employees. He said the minor accidents which do not receive publicity should be given more attention so the "narrow escapes" are heard from less frequently.

Twelve employees received prizes in a drawing among those who have not had a lost-time accident during the month. A grand prize is to be awarded

(Continued on page 24)

Make Good Progress on Red Rock Pulp Mill

One Thousand Men Are Now Employed On the Project—Approves Agreement For Supplying Kenora Paper Mill With Power—General Timber Co. Is Granted Charter To Cut Pulpwood and Erect Pulp Mill—Other News.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., August 16, 1937 — Good progress is being made on the foundation excavations of the Lake Sulphite Pulp Company, Limited, on its mill at Red Rock, Ont. Concrete is now being poured and the deep water docks for shipping have been completed. All contracts for mill equipment have already been awarded and the contract for building the town hall will be let in a few days. One thousand men are at present employed by the company and, by the end of the present month, over two thousand will be given work in construction and woods activities. Roads and camps are now being built. The company reports a good demand for the output of the ground wood pulp mill of the Nipigon Corporation which was lately acquired by the Lake Sulphite Pulp Company. The plant is operating at capacity, the output for the year having been sold.

Approves Power Project

Approval of an agreement whereby the Winnipeg Electric Company will supply the Kenora Paper Mills, Limited, Kenora, Ont., with 5,000 firm horse power and secondary power as required, up to 20,000 horse power and covering the supply of additional power as required by new industries or by the town of Kenora was made recently by Hon. Peter Heenan, Minister of Lands and Forests for Ontario and representatives of the Winnipeg Electric Company, Kenora Paper Mills and the civic authorities of Kenora. The terms of the proposed agreement provide for the supplying of 5,000 horse power to the Kenora Paper Mills as soon as possible. If the work on the transmission line is commenced in a short time, it is expected that new power will be available in Kenora by February 1, 1938. Its arrival will eliminate the constant curtailments at the Kenora plant caused by the recurring fluctuations of the water levels of the Lake of the Woods which effect Kenora power plants.

General Timber Co. Gets Charter

A charter has been granted the General Timber Company, Limited, of Port Arthur, which has been granted twenty-one year cutting rights in pulpwood in the Big Pic River section of the Thunder Bay district and to erect a 200-ton daily capacity sulphite mill to cost between three and one-half million and five million dollars. There is a contract with the Marathon Paper Mills Company of Rothschild, Wis., for delivery of sulphite pulp which, at current prices, will amount to four million dollars annually for twenty-one years. A. L. Johnson, of Port Arthur, is president of the new company, and J. V. Stewart is vice-president and secretary-treasurer. The authorized capital of the General Timber Company is 100,000 shares of no par value of which 60,003 are outstanding. Messrs. Johnson & Stewart were engaged in export contract pulpwood cutting last year with several hundred men in the bush north of Port Arthur and, when the Ontario government decided on re-allocation of Thunder Bay timber areas, they sought concession under the new scheme. Construction of the mill will be carried out by a General Timber subsidiary company. Whether the Marathon Company or General Timber's subsidiary will manufacture sulphite pulp into paper, textiles, plastics or other materials in Canada is a matter of conjecture. One object of the program of the Ontario government in re-allocating pulpwood rights for sulphite pulp manufacture is to encourage establishing foreign industries in the province. Engineers will soon choose a mill site in the Thunder Bay district.

Agree on Wage Scale for Bush Workers

The Abitibi Power and Paper Company and the Ceneral Paper Company of Muskegon, Mich., have agreed on a wage scale for operators and bush workers in Ontario for the coming season. They will be paid $2 per four-foot cord for jackpine and $2.25 a cord for spruce and balsam cutting.

Hinde & Dauch Expect Big Year

The Hinde & Dauch Paper Company of Canada, Toronto, are operating their plant nearly to capacity and expect that 1937 will be the biggest year so far, not only for their own industry but the paper trade in general. While the last half will probably be slightly lower in operating results, compared with peak production and sales of the first six months, profits for the entire year should be substantially higher than the $395,408, or $1.32 per share, reported for the year ended December 31, 1936. In his last statement to the directors, accompanying the usual dividend cheques, L. F. Winchell, vice-president and general manager of the company, stated that prices for raw materials were advancing too rapidly for the selling prices of the company's products to reflect this advance. Prices are still going up at a rate which Hinde & Dauch officials do not deem it advisable to keep pace with in stepping up the sale figure of their products.

Fine Papers Get Charter

A provincial charter has been issued to Fine Papers (London) Limited with headquarters in London, Ont., and an authorized capital of $40,000 to make, buy, sell and deal in paper and paper products. Frederick McGill Halls is the president of the newly incorporated company which has been doing business for some years, and among others interested are Richard W. Northey and James H. Edwards, both of London.

General Carton Corp. Formed

General Carton Corporation, Limited, with head office in Kitchener, Ont., has been granted a charter to sell, import and export paper and paper goods, cartons, etc., with a capital divided into six hundred preference shares of the par value of one hundred dollars each and eight thousand common shares without any nominal or par value. Among the provisional directors are Harry D. Anger, Robert D. Hume and F. R. Hume.

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Power Show To Be Held In Chicago Oct. 4–9

Interest Grows In Exhibition Which Is To Be Held In New International Amphitheatre—Evidence Pointing To Advances In Paper Prices After Labor Day Increases — Ralph Burnett, Golf Chairman, Names Winners.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., August 16, 1937 — New types of power plant equipment will be featured at the Chicago Exposition of Power and Mechanical Engineering to be held in this city from October 4 to October 9, inclusive. The new International Amphitheatre will house the exhibits which will come from the Great Lakes region and from those exhibitors throughout the country interested in the rich Mississippi Valley market.

Equipment on display at the exposition will include the following classifications: fuels, combustion equipment; refractories; steam generating equipment; steam distribution; piping and fittings; pumps and hydraulic equipment; electric generators; power transmission accessories; precision instruments; tools and machine tools; power driven units; materials handling systems; factory air conditioning equipment; lubricants; refrigerating machinery and operation and maintenance materials. A number of industries servicing the paper industry are already listed among the exhibitors.

May Get Credit on Payroll Taxes

Illinois business in general is interested in the possible passage of HR8174 in the Federal Congress. This measure, which has already passed the House of Representatives at this writing, would permit Illinois to receive full credit on all payroll taxes paid under the unemployment compensation insurance title of the Federal Social Security Act despite the fact that Illinois did not enact its conforming act until this spring. If the proposed law gets through the final legislative jam it will mean considerable to the local paper industry inasmuch as it would permit a return of approximately $50,000,000 to Illinois on money now being paid into the Federal Treasury on payrolls of 1936. If the bill fails to pass employee benefits will be returned beginning only on 1937 payrolls payable in 1938.

S.A.P.I. Reports Winners

While the midwest division of the Salesmens Association of the Paper Industry is preparing for its semi-final golf outing at the Park Ridge Country Club on Friday, August 27, Ralph Burnett, golf chairman, takes time off to announce the prize winners at the Bob O Link outing on July 23 which was attended by 81 salesmen and guests. The charmed circle, as reported by Mr. Burnett, is as follows: Low gross, Ray Odman, Ray L. Odman and Associates; blind bogey, Courtney Reeves, Allied Paper Mills; low net, 17 handicap and under, Ray Freeman, Bradner Smith & Co.; low net, 18 and over, P. Goodyear, Import Paper Company; second low net, H. L. Montgomery, Berkshire Papers, Inc., third low net, R. C. Swan, Champion Paper and Fibre Company; low net, first nine, F. D. White, Patten Paper Company; low net, second nine, Ed Hayburn, Bradner Smith & Co.; low putts, first nine, W. J. Tilden, Mead Sales Company; low putts, second nine, C. Hunt, Zellerbach Paper Company, Kansas City; low net foursome, Paul Wesco, Fox River Paper Company; H. Vose, Berkshire Paper Company, D. C. Frisbee, Midland Paper Company, and Ed Sheaffer, Missisquoi Corporation. The low putt foursome was made up of W. J. Tilden, Harold Leahy, LaSalle Paper Company; W. N. Gillett, Chicago Paper Company, and C. Hunt. The high gross foursome was composed of E. G. Schmidt, International Paper Company; H. D. Fralick, International Paper Company, and William Grant and John Wilson of the Graham Paper Company.

Paper Prices May Advance

The undertone in all grades of paper was firm with evidence piling up on all sides for a marked upward jump in virtually all markets shortly after Labor Day. A general scarcity in raw materials and a tremendous increase in the cost of production traced to taxes, wages and other factors combine to make materially higher prices the only possibility. Most conjectures in this territory center on "how high."

Fine papers were quiet during the week with the higher grades showing the most disposition to activity according to local reports. Sulphites were steady in all grades. Business papers for fall use were showing an increase in volume as wary buyers watched production costs and reported scarcities with a wary eye. Newsprint circles were in an improved and optimistic mood as were virtually all groundwood representatives contacted. Book and cover papers made no particular news during the week with the latter showing perhaps a bit more activity during the past six days.

S. L. Schwarz in Europe

Executives of the Schwarz Paper Company, well known Chicago coarse paper firm, are going to get a first hand impression of the paper business in Europe during the next few months. It has been announced that S. L. Schwarz, now in Europe, is extending the trip for another two months and will make a study of the pulp and paper business in Sweden and Norway a primary objective of the combined business and pleasure jaunt.

August Issue of Informant

The August issue of the "Informant," published by the Zellerbach Paper Company and distributed through local jobbing connections, contains at least three special items of help to the buying trade. First of all, some cleverly written copy puts some punch into August selling and August selling opportunities. Secondly, the "Informant" reveals some interesting facts about the paper cutter and his job. In the third place, the publication lists service directories, multi-colored letter-heads and directory cars as three suggested business getting possibilities. The issue is printed on Herculean Cover-Yellow-substance 65. Antique finish.

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Financial News of Pulp and Paper Industry

Bondholders of Abitibi To Meet Regarding Improvement Program — Great Northern Declares Extra Dividend of 12 Cents—Soundview Pulp Co. Reports Profits of $946,365 — Eddy Paper Corp. Reports $535,000.

New York Stock Exchange
High, Low and Last for the Week Ending August 18, 1937

	High	Low	Last
A. P. W.	7½	7	7⅛
Armstrong Cork Co.	64⅝	63	63¾
Celotex Corp.	41½	38½	38½
Celotex Corp. pf.	78	76½	78
Certain-Teed Products Corp.	14	13	13½
Certain-Teed Products Corp., pf.	55⅛	51⅛	54
Champion Paper & Fibre Co.	58⅜	57	58
Champion Paper & Fibre Co., pf.	110	110	110
Congoleum-Nair Co.	38⅞	38⅛	38⅛
Container Corp. of Amer.	29½	28⅜	28½
Continental-Diamond Fibre Co.	18½	18¼	18⅜
Crown Zellerbach Co.	22½	21¼	21½
Crown Zellerbach Co., cum. pf.	100¾	98	100¼
Flintkote Co.	31⅞	30	31¼
Robert Gair	13	12½	12½
Robert Gair, pf.	34½	34½	34½
International Paper & Power (a)	20⅞	19	20¼
Internationa Paper & Power (b)	15½	14	15
International Paper & Power (c)	7⅞	7	7⅛
International Paper & Power, pf.	110⅞	105½	109
Johns-Manville Corp.	138¼	135	138¼
Johns-Manville Corp. pf.	125	124	125
Kimberly-Clark Corp.	41¾	39½	41¾
MacAndrews & Forbes	33	33	33
Masonite Corp.	54	51¼	53½
Mead Corp.	28¾	27½	28½
Mead Corp., pf.	95	93½	95
Paraffine Companies, Inc.	73	71	71
Paraffine Companies, Inc., pf.	100	100	100
Ruberoid Co.	37½	36½	37½
Scott Paper Co.	43	41	42
Sutherland Paper Co.	33¼	33	33¼
Union Bag & Paper Corp.	81¼	79¾	80¾
United Paperboard Co.	11	10¾	11
U. S. Gypsum Co.	117⅜	115	115
U. S. Gypsum Co., pf.	162⅛	162⅛	162⅛

New York Curb Exchange
High, Low and Last for the Week Ending August 18, 1937

	High	Low	Last
American Box Board Co.	20¾	20⅛	20⅛
Brown Co., pf.	83	80¼	81
Great Northern Paper Co.	40	39¾	39¾
St. Regis Paper Co.	9	8½	9
St. Regis Paper Co., pf.	111¾	109¾	111¾
Taggart Corp.	10½	10⅜	10⅜

Abitibi To Spend $3,000,000

According to the improvement plans of the Abitibi Power and Paper Company, Fort William and Port Arthur will benefit to the extent of about $3,000,000 out of its $7,000,000 provided for improvements. This is the estimate prepared by T. E. Silver, manager of the mills. The plan will increase the total capacity of the Abitibi mills by 93,310 tons of newsprint annually, and effect savings in cost operations of $1,057,000. The capacity of the Fort William mill will be increased from 168 to 250 tons per day by the improvements, and costs of production will be reduced by $2.82 per ton, giving an annual saving in operating expenses of $217,715 if the plant is operated to capacity. Similar improvements in the Port Arthur Division will require an expenditure of $1,168,000. This will increase the mill capacity from 251 to 300 tons a day and reduce operating costs by $3.08 a ton. The largest single item of expenditure on the mill at Fort William will be $335,000 for the transfer of the paper machine from Sturgeon Falls. Water supply from beyond Burks Shoals is expected to entail $250,000. There will be four additional grinders with motors and building extension to cost $225,000. A chemical pulp system to cost $70,000 is also proposed.

A meeting of the bondholders of the Abitibi Power and Paper Co., Limited, has been called for October 15 next at the Canadian Bank of Commerce building, Toronto, to consider the sale of assets and the foregoing program which is part of the official plan of reorganization presented by the Bondholders' Representative Committee and the transfer of the mortgaged properties of the company to the new company contemplated by the plan. Notice has been issued to the bondholders pursuant to an order of the Supreme Court of Ontario.

Great Northern Declares Extra

Directors of Great Northern Paper Company have declared an extra dividend of 12 cents a share on the common stock, in addition to the regular quarterly payment of 25 cents a share, both payable September 1 to stockholders of record August 20. In the previous quarter an extra of 13 cents a share was paid.

Soundview Reports $1.92 Per Share

The Soundview Pulp Company and subsidiaries reports for the seven months ended July 31 net profit, $946,365, equal to $1.92 a share on 488,250 shares of stock, compared with a net profit of $316,733, or 92 cents a share on 334,800 shares of stock, after giving effect to a 300 per cent stock dividend, for the seven months ended July 31, 1936.

Eddy Paper Corp. Nets $535,000

APPLETON, Wis., August 16, 1937—Eddy Paper Corporation reports net profit for the six months ended June 30 of $535,709, after depreciation and federal income taxes. This is equal to $3 a share, and compares with $171,730, or 96 cents a share, for the first half of 1936.

Masonite Corp. Votes Extra Dividend

APPLETON, Wis., August 16, 1937—Masonite Corporation, Wausau, Wis., last week voted an extra dividend of 75 cents a share on the common stock, payable August 25 to stock of record August 15. Regular quarterly dividends of 25 cents on the common and $1.25 on preferred also were voted.

Price Brothers Stocks Approved

MONTREAL, August 16, 1937—The new preferred and common shares of Price Brothers & Co. has been approved for listing on the Montreal Stock Exchange, and were removed from the unlisted department on August 10.

J. Paul Chase Leaves Taylor-Atkins

HOLYOKE, Mass., August 17, 1937—J. Paul Chase formerly of Holyoke has resigned as superintendent of the Taylor-Atkins Paper Company of Burnside, Conn., it was announced last week. He was formerly with the Franklin Paper Company of this city.

A. P. & P. A. Surveys Independent Labor Organizations in Paper and Pulp Industry

At its last meeting the Manufacturing Subcommittee voted to recommend to the Executive Committee of the American Paper and Pulp Association that a survey of independent labor organizations be made. After considerable discussion, the Executive Committee suggested, without formal vote, that the survey be made in an informal manner. Consequently, a special letter was sent to all members of the Association, that it was known did not have union agreements. Eighty-four replies were received.

Of the eighty-four companies that reported, sixty-three indicated that in so far as they know, their employees have no organization of any form whatsoever. The majority of such reports were confined to the smaller companies, chiefly in the northeast.

In addition, three companies reported that they are now negotiating with the American Federation of Labor Unions. All these companies are located in the Lake States.

Of the total number of companies included in the survey, nineteen report some form of independent labor organization. In the majority of cases these organizations have developed or are in the process of developing from mill representation agencies that were in effect during the NRA period.

In one instance it was reported that an independent union had been set up as a result of a dispute between the local union, which formerly had an agreement with the company, and the International unions. In two cases organizations originally designed for other purposes have been used for discussion of labor and operating problems between the management and the workers for a long period of time. In the one case a safety committee that meets monthly considers grievances and makes recommendations to the management. It is known that the mill management cooperates actively with this committee. In the other case, an organization that was originally designed to give workers group insurance and to permit them to participate in stock ownership has taken up labor questions in the mill and made recommendations to the management.

It was reported in one case only that the independent organization of the workers was incorporated. One other company reported that their workers proposed to incorporate when the revision of the organization is completed.

In the majority of cases the companies were unable to make a full report as to the present status of their employees' organizations. The independent organizations that are now developing out of former employee representation agencies have, as a result of the Supreme Court's decision, undergone reorganization, which has not been completed in any reported case.

All reporting companies have withdrawn active participation in their employees' organizations. Not only have management representatives been eliminated, but the payment of wages to employees who attend meetings while off duty has been stopped, although employees on duty may attend such meetings without pay deduction. In several cases reports indicate that meetings of the organization are held upon company property in some convenient place about the mill. Ordinarily there is no charge for such meeting space. In other cases all meetings are held outside the plant boundaries. The keeping of records and other matters related to the organization are now generally handled by the members of the organization or, in some few cases, by an organization paid secretary.

The reports indicate that the desire of employees to organize independently is largely dependent upon the success of the organizations that were in operation prior to the Supreme Court's decision. It is apparent from the reports that the successful organizations received thorough cooperation from the company management in those days and that the discussion of labor conditions and wage questions were handled in a businesslike, serious manner. The employees generally desire to maintain their independence and they have voluntarily undertaken steps to reorganize their agencies.

No reports indicate, nor is there other available information, to show that there has been a pronounced tendency for independent organizations to affiliate with outside agencies. In fact the only clear-cut case known is one in the Lake States.

Constitutions and by-laws revised since the Supreme Court's decision, were not submitted, chiefly because they have not yet been formulated by the workers' organization or because there is apparently no need for such formality. Approximately half of the reports indicate no formal document whatsoever.

Because of this situation it is not possible, therefore, to analyze in this report the usual provisions that have been set up by employees in various companies to provide means for collective bargaining and for the discussion of labor problems. This analysis must await the completion of the reorganizations that are under way.

In conclusion, it should be noted that the number of cases where employees have set up independent organizations in the industry is relatively small. There are few such agencies in the small companies and, incidentally, few such companies now have union agreements.

In the larger companies, however, there usually is some form of employee organization, either independent or affiliated with the American Federation of Labor Unions.

Montville Paper Corp. Starts

[FROM OUR REGULAR CORRESPONDENT]

MONTVILLE, Conn., August 16, 1937—The Montville Paper Corporation, a new concern manufacturing light-weight chip board, is just getting into production

Obituary

Bay Edward Estes

Bay Edwards Estes, treasurer of the Advance Bag and Paper Company, Inc., and author of many articles on economics and allied subjects, died suddenly Monday, August 9, at his summer home in Rangeley, Me. He had been ill three days with a heart ailment. His winter residence was at 5 Arlington road, Wellesley, Mass.

Mr. Estes, who was fifty-one years of age, assumed treasureship of the Advance Bag and Paper Company two years ago, after being affiliated with the firm for many years as a director. During 1907-10, he was assistant in government at Harvard. After that he practiced law for a time before entering business.

Born in Winn, Me., on April 8, 1886, he was a son of Jere Edward and Mary Eva (Hanscom) Estes. After completing his course of study at Coburn Classical Institute, he matriculated at Harvard College from which he was graduated in 1907. Two years later he received his LL.B. degree from Harvard Law School.

He engaged in law practice from 1909 to 1917, being a member of the law firm of Timberlake, Estes & Co. In the following years, Mr. Estes was actively associated with several lumber, paper, and banking houses. These included Southern Advance Bag and Paper Company, Advance Bag and Paper Company, Hodge Supply Company, Penobscot Power Company, Pleasant River Pulp Company, Wayne Sewerage Company, Allied Utilities Company, and the Investment Holding Company of Maine. During the World War, he was first lieutenant in the Ordnance Department. He was made captain in 1918 and was detailed to the General Staff in Washington. During 1919, he was chairman of the commission on sales of buildings and equipment. Mr. Estes was honorably discharged from service in 1919.

He held membership in several Masonic bodies, Kiwanis, American Legion, Harvard Club, and the Junto Club.

Surviving him are his widow, the former Mellie Grover Timberlake, whom he married in 1909; and four sons, Bay E. Estes, Jr., of New York, Robert Francisco Estes of Hodge, La., Donald Timberlake Estes of Wellesley, and Richard Fremont Estes of Philadelphia.

Henry C. Cassidy

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., August 17, 1937 — Henry C. Cassidy, former superintendent of the Holyoke Division of the American Writing Paper Company, Inc., died Thursday night at his home 10 Cottage avenue after a short illness. Mr. Cassidy was among the last of the Lee papermakers who came down to Holyoke in earlier days. He had been a resident of Holyoke 52 years and retired from active service seven years ago.

He was a member of Shields Court MCOF and the Holy Cross church. Besides his wife he left three daughters, Sister St. Colette of the Sisters of St. Joseph at Milford, Mrs. Stanley Cote of Watertown, and Agnes at home; six sons, Henry L. of Irvington, N. Y., Dr. James M. of West Springfield, Rev. Joseph of Baltimore, Walter J. and Frederick of this city, and and Edmund J. at home; and four sisters, Sister Mary Coletta of the Sisters of St. Joseph at Hartford, Conn., Mrs. Mary Croughwell of Waterbury, Conn., Miss Anna Cassidy of the same city, and Mrs. James McTigue of Lee. The funeral was held Saturday with burial in Calvary cemetery of this city.

A. T. Nesbitt Speaks on Europe

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, August 16, 1937—A. T. Nesbitt, president of the Cincinnati Cordage and Paper Company, and who has been located in Dayton for many years, was called upon the past week to address Dayton luncheon clubs on his trip to France as a member of the Rotary clubs of America.

Mr. Nesbitt met a number of paper men on the trip abroad and was pleased to exchange ideas with them and learn of more favorable conditions wherever he went. He and the other Rotarians were in Europe at an especially interesting time and were accorded special privileges which made their stay unusually pleasant and profitable.

"Mrs. Nesbitt accompanied me on the nine-weeks' trip," said Mr. Nesbitt in referring to the vacation as being a most enjoyable one, "and we visited twelve or thirteen countries. We attended the Rotary International Convention one week at Nice, France, going over on the S. S. Roma.

"We stopped at the Madeira Islands, Cassablanca in the French Morocco, Gibraltar, Algiers and then on to Nice. From there we went to Italy, visiting Naples, Rome and Milan, thence on to Switzerland.

"From Switzerland we went to Germany, up the Rhine to Cologne; Holland, Belgium, Paris, France; London, up to Scotland, reaching Edinburgh. We had a fine trip through the Trossachs in the Highlands of Scotland, thence back to London and home on the S. S. Berengaria.

"We met a number of paper manufacturers, merchants and others identified with the trade from the United States and all parts of the world. We had a pleasant visit for many days with Mr. and Mrs. Morgan T. Thomas. Mr. Thomas is president of the Garrett-Buchanan Company of Philadelphia.

"We had an unusual experience in having a Rotary conference with Mussolini in his office in Rome. He spoke to us in English and was very nice to the "Rotary Anns." Each one was given a rose. He shook hands with everyone and welcomed our entire party to Italy.

"It was a very pleasing experience. At the same time we were in his office, he spoke to 70,000 women in the Square of the Unknown Soldier in Rome. It was a wonderful sight.

"People in the countries that we visited were friendly to America. They put themselves out to make us have a splendid time.

"Taking things all in all as we viewed them abroad, we believe they are becoming more prosperous. In some of the countries we visited the people were very busy and business was good.

"We are led to hope that prosperity will spread to every section of our own country and abroad and that the whole world will be brought to a better understanding and a more peaceful and stable life."

WISCONSIN PAPER MILLS TO SPEND $7,500,000

(Continued from page 15)

each month to an employee without an accident record. Another major prize will be awarded to a worker in a department which has a perfect safety record for a month. The eligibility for prizes is helping prevent small accidents as well as major ones.

Reducing River Pollution

Recommendation has been made by the state board of health committee on water pollution to the Badger Paper Mills, Inc., Peshtigo, Wis., that it continue its efforts to reduce wastes to a minimum and make provision for financing of a waste sulphite liquor treatment unit. This was in lieu of a formal order to stop discharging untreated waste materials into the Peshtigo River.

"There exists a reasonable probability that within the next few years one or more technically sound and economically feasible treatment processes which will materially reduce the pollutional characteristics of spent sulphite liquor will be available to the paper industry," the committee said in a letter sent to E. A. Meyer, president of the company. The letter followed filing of a complaint by 200 residents of Marinette County who said the present situation was causing obnoxious odors, killing fish and damaging fishing nets used in Green Bay through rapid deterioration.

Must Abate Smoke Nuisance

At a hearing last week, the Wisconsin Tissue Mills, Menasha, Wis., was given two weeks by city authorities to abate a smoke nuisance claimed by residents of the vicinity. An engineer has been engaged to study the situation and will advise the company how to remedy the situation. Action was postponed temporarily on punishment of the company for violating a city ordinance, after notification of the condition must be eliminated.

Marathon Paper Mills Build Bridge

Marathon Paper Mills Company has completed the framework of a new bridge at its Menasha Products (carton) division at Menasha, Wis., to connect its carton and wax divisions. The bridge will facilitate handling of material between the two plants without encountering street traffic, by means of electrically operated trucks. This is part of its improvement program which includes a new wax division building 255 by 61 feet, and a small structure to house 16 wax storage tanks.

Use New Equipment in Building Mill

Work on the new manufacturing building of the Kimberly-Clark Corporation at its Lakeview mill at Neenah, Wis., is being speeded by the use of a new piece of equipment by the Koepke Construction Company. It is a concrete pumper which conveys the mix from the mixer through a pipe line to the point at which it is needed. The slow work of 20 to 30 men with wheelbarrows is saved by this method. The building will be completed on schedule early this fall.

Independent Union To Carry On

Despite the decision of the Wisconsin Labor Relations Board to deny recognition to an independent union of employees of the Nekoosa-Edwards Paper Company, Nekoosa, Wis., the union intends to carry on, Carl Stellmacher, its president, declared in an address last week at an outdoor meeting. The meeting was called to answer rumors that the company intended to discharge any employees who did not join the American Federation of Labor unions within thirty days, and that the company had signed a union closed shop agreement.

A letter from John E. Alexander, president of the company, was read flatly denying the rumors.

Gilbert Paper Co. Has Outing

There were 1,023 registrations at the annual picnic of employees of the Gilbert Paper Company, Menasha, Wis., Saturday, August 7, at the Menasha City Park. A program of games and contests was conducted during the day, and refreshments were provided by the company. Following a picnic supper, there was a treasure hunt and a dance. The company provided a liberal number of prizes.

Approximately 3,000 persons attended the annual picnic of the carton division of the Marathon Paper Mills Company, Menasha, Wis., Saturday, August 14 at Smith Park at Menasha. Ferdinand Jung was general chairman. Two baseball games were played among teams organized in various departments, and there were many contests for children and grownups. Each employee was given five tickets good for purchases at the concession stands. Picnic dinners and suppers were served, followed by a dance in the evening.

New Stumpage Rates in New Brunswick

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., August 16, 1937—The Government of New Brunswick has announced that, during the current license year, new stumpage rates will be in effect on timber cut on the provincial Crown lands. The announcement states "that the new rates are higher than those in effect during the past two years and are considered to be reasonably in line with the big advance that has taken place in lumber and pulpwood prices. This means an increase from $2 per thousand superficial feet for spruce sawlogs to the new rate of $3.50, and other advances according to classification."

While no official figures have been issued general expectations are for a substantial increase in the cut of pulp wood on Crown lands in New Brunswick, this season whilst cutting on private lands is also ahead of figures in recent years. The cut of pulpwood on Crown lands in 1934 which was considered a very good year, was 86,000 cords and last year it was around 46,000 cords. This year's figures, it is expected will be much in advance of the 1934 total.

John C. Hurd Visits Paper Men

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., August 16, 1937—John C. Hurd, executive secretary of the New England Paper Merchants Association, went to Lowell and Lawrence, Mass., and Portland, Me., Friday, to call on some of the members of the association and some merchants who are not members.

Motor-Driven Top Press Rolls Increase Speed and Reduce "Crush"

By W. I. Bendz[1]

The elimination of friction as the driving medium for the upper roll of a pair of press rolls has been a problem which has interested paper machine builders for a long time. The common type of drive for a press section is to couple the lower roll to the variable speed lineshaft of the machine through speed adjusting inverted cone pulleys, a disconnecting clutch and gearing. The upper roll is left to turn in its own bearings and driven only by the contact friction with the lower roll.

While this is entirely satisfactory for some types of machines, a number of factors make it undesirable for the drive of the wet end of a cylinder paper machine. In the first place, wet paper stock between the pair of press rolls destroys the normal contact between them and considerably increases the tendency for them to slip, much the same as experienced by a person attempting to walk up a steep hill covered with soft slush on a winter day. The relative motion or slipping between the rolls causes a displacement of the fibers forming the sheet of paper which is commonly called "crush" of the sheet. This effect materially impairs the quality of the paper and with some kinds of paper presents a serious difficulty in its manufacture. A second factor concerning the conventional drive is that the primary purpose of a pair of press rolls is to remove as much water as possible by the exertion of pressure upon the wet stock. The higher the pressure between the rolls the more water will be removed. However, increased pressure greatly increases the tendency to slip and cause "crush" of the sheet. Consequently, slipping limits, in part at least, the maximum pressure and hence the effectiveness of each pair of press rolls. A third factor of the usual drive is that the torque to turn the upper press roll must be transmitted through the felt carrying the wet sheet, which factor shortens the useful life of a felt.

A number of attempts have been made mechanically to couple the two rolls so as to remove the element of frictional transmission of torque between the two. The complication arising is that the periphery of the two rolls is never equal and will not remain a constant difference as wearing changes their diameters unequally. Consequently, any form of direct gearing is, of course, out of the question since there is no constant ratio. This leaves all mechanical drives with some form of a variable transmission ratio as the only alternative.

An electrical scheme which has met with excellent success drives the top roll of each pair of press rolls with a D.C. variable speed motor. The motor gets its power from a D.C. generator driven directly from the shaft of the lower roll. Each motor and generator is designed as a unit with the proper electrical characteristics to make the motor deliver essentially constant torque as the paper machine is varied over its entire speed range. Both the motor and generator have their shunt fields separately excited from a separate exciter D.C. generator.

Since the shunt field of the D.C. generator coupled to the lower (driven) roll is separately excited at a constant voltage, the voltage output of the generator will be directly proportional to the speed with which the generator is driven (over its operating speed range). To express this differently, the output voltage of the generator will be proportional to the speed of the lower press roll.

If the effect of armature resistance of the D.C. motor driving the top roll is neglected, it will operate at a speed directly proportional to the voltage applied across its terminals. In this scheme, the effect of armature resistance of the motor is compensated for by a booster generator (to be described) and, therefore, the motor will run at a speed proportional to the impressed voltage. Since the motor is fed from a generator whose voltage is proportional to the speed of the lower roll, the motor will drive the top roll at a speed always proportional to the lower roll. Considering the machine as a whole, if its speed is changed by altering the lineshaft speed, all motors turning the upper press rolls will be changed in speed by the same amount because of the change in speed of the generators coupled to the lower rolls. If the speed of any one section is changed so as to alter the

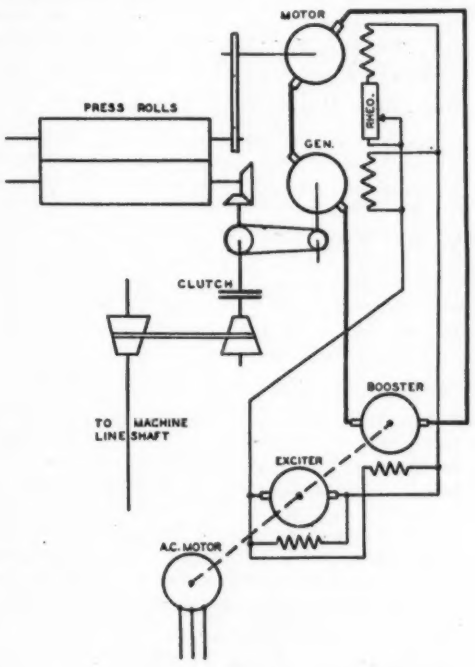

FIG. 1.
Diagrammatic sketch of component elements for the press roll drive.

[1] Industrial Division Westinghouse Elec. & Mfg. Co., Boston, Mass.

"draw" of the paper, only the motor driving the upper roll of that particular section will change.

While the above conditions of function of the drive express its operation in a general way, a more exact analysis is required in order to segregate the effects of motor speed and motor torque, both of which must be understood if one wishes to grasp the proper function of the equipment.

Referring to Fig. 1, which diagrammatically shows the drive, it will be seen that the generator armature "D" is connected to the motor armature "M", through a booster generator "B", reasons for which are to be explained.

The one factor which concerns the rotation of the top roll is the torque delivered by the motor for any given speed. Torque is the yardstick by which the effect of the drive is measured. If the torque delivered by the motor exactly equals the friction of the roll bearings, there will be no transmission of driving effort through the paper or felt between the rolls.

The fundamental expression of motor torque developed is:

(1) $T = I_a \times \text{Flux}$
where T = Torque
I_a = Motor Armature Current
Flux = Motor Shunt Field Strength

Since the shunt field is separately excited, the flux is constant for any given setting of the field rheostat and the torque is directly proportional to armature current.

The characteristic of a motor performance is expressed by the equation:

(2) $$I_a = \frac{V_t - E_a}{R_a}$$

where: I_a = Motor Armature Current
R_a = Motor Armature, generator armature and connecting circuits resistance
E_a = Counter E.M.F. of the Motor
V_t = Terminal voltage
= $V_g + V_b$
= Generator volts + booster volts.

The armature resistance, R_a, is, of course, a constant value. Other terms of the above equation may be expressed:

(3) E_a = RPM × Motor Shunt Field Strength
(4) V_t = Constant booster volts + generator volts
= Constant V_b + RPM × Generator shunt field strength

FIG. 2.
Voltage-speed characteristics. Constant torque is delivered over the complete speed range.

Obviously, an increase or decrease in motor torque beyond this value will cause the upper roll to add to or absorb driving force from the bottom roll.

The importance of equations (3) and (4) is that it should be noted that both the motor counter E.M.F. (E_a) and the terminal voltage (V_t) are directly proportional to speed. Since the two rolls are always in contact the same constant of proportionality exists in both equations and hence E_a always varies directly proportional to V_t.

Referring to Fig. 2, in which the values of these terms are plotted as volts against speed in RPM, the above statement is pictured by the parallel lines V_t and E_a, separated by a constant amount equal to the booster voltage V_b which is permanently adjusted to equal the value of armature resistance drop, $I_a R_a$.

Again noting equation (2) and bearing in mind that R_a is a constant term, it can be seen that the armature current I_a is a constant value regardless of the speed of operation since V_t and E_a always differ by a constant amount. Placing a constant value for I_a in equation (1) shows that the motor torque turning the top press roll is a constant over the entire speed range for any given setting of the motor field rheostat.

The method of controlling the motor torque is explained by first rewriting equation (2) as follows:

(2-A) $E_a = V_t - I_a R_a$

Substituting this value for E_a into equation (3):

(3-A) $V_t - I_a R_a$ = RPM × Motor shunt field strength

If the value of the motor shunt field strength is decreased by turning the field rheostat in the direction to increase its resistance, the armature current I_a must be increased since RPM V_t and R_a all remain constant in equation (3-A). (This is a contrary conception to the effect of a motor field rheostat and is due to the fact that we are considering motor torque *relative to a given speed.*)

It is important to note that in equation (3-A) the value of the term $I_a R_a$ is quite small in comparison to the term V_t. Consequently, in order to balance the equation the percent increase in I_a is considerably larger than the percent decrease in motor shunt field strength. That is, the motor armature current increases more than the field strength is decreased.

Referring again to equation (1), it is apparent that the net result of decreasing the motor field strength is to increase the motor torque, since as just explained, the armature current is increased more than the flux is decreased.

The booster is a low voltage generator whose purpose is two-fold. First, it supplies voltage to force current through the motor, thereby causing torque when the rolls first start to turn over from standstill, at which instant the generator voltage is zero. Second, it makes the speed characteristic curve for the motor a straight line parallel to the generator speed characteristic, without which it would not be.

The first purpose of the booster is readily explained by equation (2). If there were no booster generator, at standstill V_t ($V_t = V_g$), and E_a would be zero and I_a would also be zero. Consequently, no motor torque would be developed. By adjusting the booster to generate $I_a R_a$ volts, at standstill $V_t - V_b = I_a R_a$ (since $V_g = 0$). At this instant $E_a = 0$ and consequently $I_a = \frac{I_a R_a}{R_a} = I_a$, which means that 100 per cent normal armature current is developed at the in-

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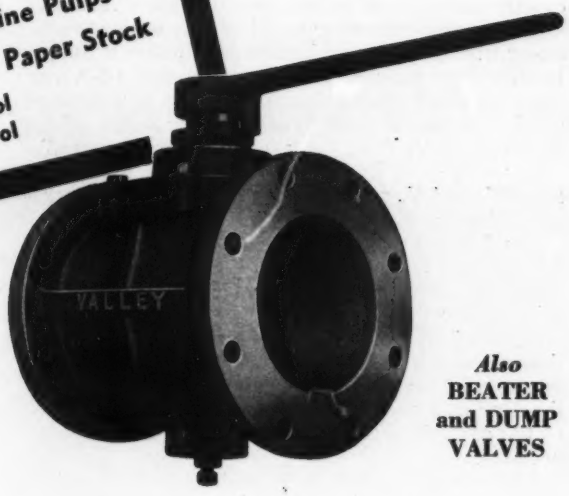

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stant of starting the rolls and the normal motor torque is ready to accelerate the top press roll from zero speed on up to normal speed.

The second purpose of the booster generator is explained by referring to equation (2-A) and Fig. 2, dotted line, E_a'. In (2-A) V_t would equal V_g if no booster were used. At zero speed $V_t = 0$, $E_a = 0$, and $I_a = 0$. As the generator accelerated and I_a began to flow, E_a' would equal $V_g - I_a R_a$. In Fig. 2 it can be seen that the line E_a' is not parallel to V_g and under these conditions the motor speed would not be exactly proportional to the generator speed, since V_g also represents generator speed and E_a represents the motor speed. Hence the booster is adjusted to supply $I_a R_a$ volts. Referring again to equation (2-A), at zero speed all of the booster voltage is consumed across the motor and generator armatures which makes $E_a = V_b - I_a R_a = 0$. At any other speed—

$E_a = V_t - I_a R_a = (V_g + V_b) - I_a R_a = V_g$

Since E_a and V_g are always equal the motor speed is at all times proportional to the generator speed.

Fig. 3 shows an installation of top press roll drives. At the right one of the section generators is visible, although it cannot be seen how the generator is chain driven from the shaft driving the lower roll. At the center and left of the photograph two of the section gearmotors are shown. These gearmotors have output speeds approximately 2½ times the speed of the top press rolls and are chain driven to the shaft of the rolls, the chain ratio making up the difference in speed.

Each press section is individually controlled at small control panels supported on uprights located near the section stands. Each panel contains the motor field rheostat, necessary indicating lamps, an ammeter to indicate motor torque, and a contactor which is wired to a switch operated by the section clutch.

A main control board is located adjacent to the booster generator and exciter set and does not have to be near the paper machine.

All gearmotors are of the splash and drip-proof construction and are built with thermoguard thermostats imbedded in the windings of the motors to prevent damage to motor windings in case of excessive temperature rise. In such an event a warning signal is illuminated rather than to stop the motor since continuity of service is paramount.

FIG. 3.
Motor driven top press rolls increase machine speed and improve the quality of paper.

The installation pictured in Fig. 3 has shown that the motor driven top rolls have definitely eliminated the tendency of the rolls to slip and consequently reduced the "crush" of the sheet. At the same time, the pressure between the press rolls has been increased, thereby removing more water from the paper for each pair of rolls. The latter advantage has, of course, enabled the machine to run at a higher speed yet the quality of the sheet has been improved. The starting operation of the drive is entirely automatic and is interlocked with a switch mounted on each section clutch. When the section clutch is engaged the switch completes the circuit to close a magnetic contactor, thereby initiating the flow of current to the top roll motor. The top roll motor accelerates together with the bottom roll as the generator voltage builds up proportional to speed.

To Represent Southern Kraft Corp.

Announcement is being made to paper manufacturers of the appointment of Gottesman & Co., Inc., 22 East 40th street, New York, as the sole selling agent for the kraft pulp made by the Southern Kraft Corporation mills of the International Paper Company. Tonnage will be presently available from the recently started Georgetown, S. C., mill where the Southern Kraft Corporation has installed the most modern equipment. This new important agency adds another to the already long list of connections developed by Gottesman & Co. during their extended association with the pulp and paper industry, dating back to 1886.

Gottesman & Co. have been particularly interested in the development of kraft pulp from its inception, and introduced this material to American paper makers in the very early days of the twentieth century. Gottesman & Co.'s activities also include the distribution of all grades of sulphite and groundwood.

S. L. Willson Heads Geo. B. Hurd, Inc.

HOLYOKE, August 16, 1937—Sidney L. Willson, former president of the American Writing Paper Company, Inc., who resigned last spring, has been elected general manager and chairman of the board of directors of George B. Hurd, Inc., paper concern of New York City, it was reported here last week.

Stanley Cook, formerly of Holyoke, is another executive of the concern which manufacture papeteries, tablets, and general stationery.

Mr. Willson was president, general manager and chairman of the board of directors of the American Writing Paper Company, Inc., now the American Writing Paper Corporation. He was president for three years of the American Paper and Pulp Association, and co-ordinator of the paper industry under NRA.

The directors in the meeting of July 29 approved an increase in capital stock to $100,000.

Cost Finding Committee Meets

BOSTON, Mass., August 16, 1937—The Cost Finding Committee of the Wrapping Paper Division held a luncheon meeting Wednesday at the Boston Chamber of Commerce, at which routine business was transacted. Willard H. Loud, of Stimpson & Co., Inc., who attended the drinking cup conference in New York City, reported very constructive work.

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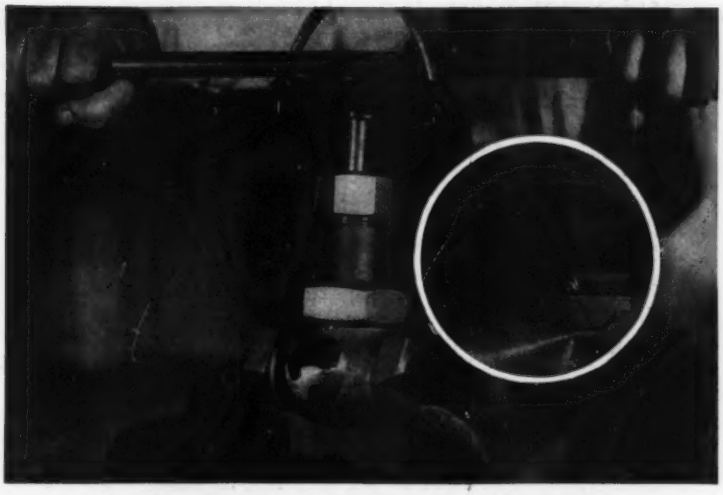
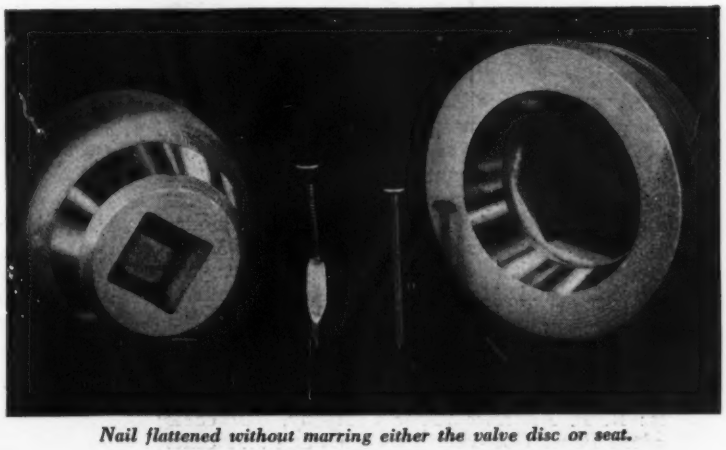


A nail crushed between valve disc and seat. Note leverage to obtain necessary power.



Nail flattened without marring either the valve disc or seat.

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Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 18, 1937 — The Government Printing Office has announced the following paper awards.

Barton, Duer & Koch Paper Company will furnish 26,920 pounds (125,500 sheets) of 50 per cent rag, 24 x 38 buff ledger paper at 12.46 cents per pound, bids for which were received on July 26. The same firm will also furnish 40,000 pounds of ivory colored calendered tag board at 8.5 cents, bids for which were received on July 19.

The R. P. Andrews Paper Company will furnish 1,211 pounds (8,500 sheets) of 28 x 34, 100 per cent rag, salmon ledger paper at 30 cents per pound and Barton, Duer & Koch Paper Company will furnish 96,250 pounds (500,000 sheets) of 17 x 22 white sulphite writing paper at 6.2 cents. The Virginia Paper Company will furnish 41,100 pounds of 19½ x 26½ buff gummed paper at $9.20 per M sheets. Reese & Reese will furnish 2,000 sheets of 24 x 36 Quaker drab cloth lined cover paper at $167.44 per M sheets. Bids for all of these items were received on July 16.

The Barton, Duer & Koch Paper Company will also furnish 46,000 sheets of 22¼ x 42 white car sign board at $32.85 per M sheets, bids for which were received on July 14.

The R. P. Andrews Paper Company will furnish 354 pounds (5,050 sheets) of 21 x 48, 25 per cent rag blue bond paper at $29.00 per M sheets, bids for which were received on July 9.

Barton, Duer & Koch Paper Company will furnish 1,000 sheets of 100 per cent rag, 28 x 40 rag mounting board at $78.00 per M sheets and 5,000 sheets of same 14 x 18 at $716.00 per M sheets, bids for which were received on July 2.

Other paper awards include: Reese & Reese, Inc., to furnish 5,000 pounds of 25 per cent rag, 34 x 44 yellow bond paper at 12.34 cents per pound; Whitaker Paper Company, 5,900 pounds of 26 x 28 high finish sulphite manila tag board at 7.84 cents per pound; and Link Paper Company, to furnish 471 pounds of oiled manila tympan paper in 48 inch rolls at 10.5 cents per pound.

The Printing Office has received the following bids for 40,000 pounds of newsprint paper in 24 inch rolls; National Pulp and Paper Company, Inc., 2.5 cents; Stanford Paper Company, 2.75 cents; and Paper Corp. of U. S., 3.375 cents.

For 37,000 pounds (17,900 sheets) of binders board; R. P. Andrews Paper Company, at 5.3 cents per pound; Barton, Duer & Koch Paper Company, 5.375 cents; and Mathers-Lamm Paper Company, 5.5 cents.

For 45,600 pounds (600,000 sheets) of machine finish book paper; Paper Corp. of U. S., at 6.07 cents per pound; Whitaker Paper Company, 6.06 cents; R. P. Andrews Paper Company, 6.07 cents; Stanford Paper Company, 6.06 cents and 5.91 cents; Barton, Duer & Koch Paper Company, 6.07 cents; Reese & Reese, Inc., 6.06 cents; John F. Post, Inc., 6.06 cents; Cauthorne Paper Company, 6.06 cents; and Mount Holly Paper Company, 6.75 cents.

For 40,000 pounds of No. 2 kraft wrapping paper in 36 inch and 48 inch rolls; Walker, Goulard, Plehn Company, 4.5 cents per pound less 2 per cent; Old Dominion Paper Company, 4.5 cents less 2 per cent; Graham Paper Company, 4.5 cents; and Whitaker Paper Company, 4.41 cents.

For 1,000 pounds of white stereotype molding paper; L. Hyman & Sons, 11.5 cents; George W. Millar & Company, Inc., 12 cents; and Cauthorne Paper Company, 11 cents.

For 500 pounds of red stereotype molding paper; Barton, Duer & Koch Paper Company, 14 cents per pound; and Cauthorne Paper Company, 15 cents.

Paper Men Go Blue Fishing

Robert Guys' Annual Blue Fishing Expedition took place Sunday, August 8. Starting from the pier at Niantic, Conn., at nine A. M. those present were Robert Guy, Bob Guy, Gordon Booth, Henry Booth, Ollie W. Messner, Arthur Satori, Milton Martin, Paul McPherson, Bob Brown and "Hap" Jensen.

After blundering around in the fog until noon Mr. Guy served a delicious chicken dinner which ole chicken eater Messner is still talking about, and Booth didn't do so bad as he was seen raiding the ice box while the rest were fishing.

Before fishing started a nice prize was offered by Robert Guy for the largest fish caught, which was won by Paul McPherson. We can't tell you how large it was as it weighed eight and one-half pounds when caught and if it keeps on growing Paul will need longer arms to tell its length.

Although it was a cool day plenty of heat was furnished in the form of hot air by Booth, Messner, Satori and a few others.

It seems that last year everyone was too seasick to fish, but it was so calm a day this year there were no mishaps. Some of the boys are planning a fishing trip for next month, but it seems there is one fellow who doesn't think he can go as he has gone eight times without getting a fish and after trying the fish markets without any luck he was pretty blue.

The Merrick Weightometer

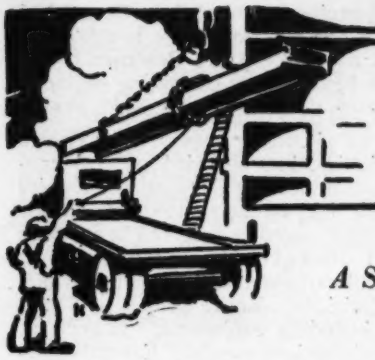
In its newly issued twenty-one page booklet entitled "Weight at a Glance," the Merrick Scale Manufacturing Company sets forth the various methods of operation and uses of the many types of Weightometers.

With this machine "you weigh while you convey," for it performs the function of continuously weighing moving loads. In every case the resulting weights may be indicated and totalized in short tons, long tons, metric tons, barrels or any other unit required by the customer.

The booklet, referred to as Bulletin 375, is available by communicating with the Merrick Scale Manufacturing Company, Passaic, N. J.

Ft. Plain Mfg. Co. Starts Plant

FORT PLAIN, N. Y., August 16, 1937.—The Fort Plain Manufacturing Company, manufacturer of paper boxes, has started production in the William Yerdon building. The firm is composed of George Gorse and Harry Hallenbeck, well known Fort Plain business men. Mr. Gorse has been engaged in the manufacture of paper boxes for 20 years. Mr. Hallenbeck will handle the business side of the company. Installation of machinery on the third floor of the Yerdon building has been going on for several weeks.



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Pulp and Paper Mills

Plan Another Mill at Prince Rupert

VANCOUVER, B. C., August 16, 1937—Announcement of the possible erection of a second sulphite pulp mill at Prince Rupert, B. C., was made at the northern British Columbia port recently by I. S. Steensland, executive vice-president of the Prince Rupert Pulp & Paper Mills Ltd., a firm incorporated under the B. C. Companies Act some years ago, and controlled by Minneapolis interests. Mr. Steensland stated that plans which had been under consideration for some time had now reached the stage where Chicago and Montreal interests were willing to back his company in launching a sulphite mill. Mr. Steensland's scheme will involve acquisition of timber limits at Usk, B. C. which were formerly controlled by the late John Willman. This mill has no connection with the plant which it was recently announced would be erected at Prince Rupert by a company headed by F. L. Buckley.

In addition to the two Prince Rupert projects the Sutton Lumber Company of Seattle, Wash., is understood to be interested in proceeding with financing of a new pulp mill on the west coast of Vancouver Island near Tofino, while plans are again being revived by Dai Thomas and associate interests in Vancouver for development of a pulp mill on the Port Renfrew district.

The B. C. Department of Lands while declining to release the names of interested parties announced recently that four separate and new concerns were now surveying B. C. sites in regard to proposals to establish pulp mills and in some cases paper mills.

Puget Sound To Add Unit

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., August 16, 1937—A new 40,000-ton unit is to be added to the equipment of the Puget Sound Pulp and Timber Company at Bellingham, Wash., doubling the present capacity of the plant. Decision to undertake this development was made recently by the stockholders of the company, meeting with the company president, Ossian Anderson, at Bellingham. The $2,500,000 expansion program will be financed with issuance of 125,000 shares of preferred stock, and construction work will be on property recently purchased from the Morrison Mill Company.

New Newsprint Machines in Canada

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., August 16, 1937—The St. Lawrence Paper Mills Company has announced that the sixth newsprint machine in its Three Rivers mill will be ready for operation on October 15. The five machines have been worked up to a productive capacity of 140,000 to 150,000 tons annually, the original figure set for six machines. The new machine will bring the total to close to 180,000 tons. This company is reported to have earnings substantially higher than last year due to the fact that operations have been at the capacity point for some months.

Consolidated Paper Corporation this week put into operation the fourth machine at its Port Alfred plant to add 33⅓ per cent to possible production at this mill and to bring total annual capacity to 150,000 tons. This company still has the St. Maurice mill near Three Rivers idle. While this plant has a rated capacity of more than 80,000 tons of newsprint yearly a considerable sum of money would be necessary to prepare it for operation.

May Build Mill at Revelstoke

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., August 16, 1937—Possibility exists of establishment of a pulp and paper mill at Revelstoke, B. C. Inquiries concerning possible sites, timber reserves, and potential power available were recently received by the Board of Trade from interested parties. It is stated that considerable suitable timber is available, as well as ample power reserves.

General Construction News

St. Louis, Mo.—The Keasbey & Mattison Company, Ambler, Pa., manufacturer of asbestos mill board, asbestos paper products, etc., is considering construction of new branch plant at St. Louis, comprising several units, equipped for large capacity. Site is being selected. Entire project is reported to cost over $400,000, with equipment.

Cleveland, Ohio—The Dobeckmun Company, 3301 Munroe avenue, manufacturer of finished cellophane products, has awarded general erection contract to the Bison Company, 12406 Marston avenue, Cleveland, for new addition to local plant, recently referred to in these columns, to be one-story, 70 x 140 feet, estimated to cost close to $60,000, including equipment. Work will be placed under way at once. The George S. Rider Company, Terminal Tower Building, is architect and engineer. Company has taken out a charter under California laws to operate in that State, in connection with recent acquisition of plant and business of the Western Shellmar Products Company, 1311 63rd street, Oakland, Cal. Plans are under consideration for expansion and improvements in last noted plant. T. F. Dolan is president.

New York, N. Y.—The A. G. Nelson Paper

Company, 220 West 18th street, has leased the five-story building at 418-22 West Broadway, totaling about 60,000 square feet of floor space, and will occupy for company headquarters, storage and distribution. The building extends through to 94-96 Thompson street, and this section of the structure will be modernized and improved for paper distributing service, including a new loading platform and other work, estimated to cost about $25,000.

North Bellmore, N. Y.—The Perfectoloid Company, 424 New Bridge road, North Bellmore, manufacturer of cellulose products, is planning early rebuilding of portion of plant recently destroyed by fire, with loss reported close to $50,000, including equipment. Reconstruction is estimated to cost approximately a like amount.

Dalton, Mass.—The Byron Weston Company, manufacturer of bond and other writing papers, has begun work on a new addition to mill on Main street, to be three-story, brick and steel type, 25 x 90 feet. It will be used primarily for storage and distributing service. Cost over $50,000, including equipment.

Franklin, Va.—The Chesapeake-Camp Conporation has work under way on power house to be used in conjunction with new local pulp and paper mill, previously referred to in these columns, and on which superstructure is in progress for main units. The power house will be equipped to use saw mill refuse as fuel, to be secured from neighboring lumber mill of the Camp Manufacturing Company, with which the first noted company is affiliated. Boiler units will be furnished by the Babcock & Wilcox Company, New York, and awards for miscellaneous power house equipment are now being let. In connection with main mill structures, an award for electrical equipment has been made to the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. New plant is expected to be ready for service late this year and will represent a reported investment of close to $3,000,000. The Rust Engineering Company, Clark Building, Pittsburgh, Pa., is general contractor. Company is a joint subsidiary of the Albemarle Paper Manufacturing Company, Richmond, Va.; Chesapeake Corporation, West Point, Va.; and the Camp Manufacturing Company, noted. J. L. Camp, Jr., is president, and John M. Camp, secretary and treasurer.

Penn Yan, N. Y.—The National Manufacturing Corporation, Fillmore avenue, Tonawanda, N. Y., manufacturer of asphalt roofing products, roofing papers, etc., has taken over a former paper mill at Penn Yan, and will convert for company production, including division for felt manufacture. Work will be placed under way at once and is reported to cost close to $50,000, including equipment.

Jersey City, N. J.—The Springfield Coated Paper Corporation, recently organized under state laws with capital of $125,000, plans operation of mill in this vicinity for production of coated and processed paper stocks. New company is represented by Sanford Freedman, 40 Journal Square, Jersey City, attorney.

San Francisco, Calif.—The Schmidt Lithograph Company, Second and Bryant streets, glazed and coated paper stocks, etc., has completed plans for new plant at Sterling and Bryant streets, to be six-story and basement, equipped for large capacity in paper-converting and other divisions. It will cost close to $250,000, including equipment. Bids have been asked on general erection contract and work is scheduled to begin early in the fall. Jesse Rosenwald, 525 Market street, San Francisco, is consulting engineer.

Lockport, N. Y.—The Flintkote Company, Mill street, manufacturer of roofing papers, floor linings and kindred specialties, has awarded general contract to J. O. Ross Engineering Corporation, Empire Building, Pittsburgh, Pa., for new one-story addition to mill on Frost street, recently referred to in these columns, and will proceed with superstructure at once. Company will carry out improvements in different operating divisions. Entire project will cost close to $75,000, including equipment. Eugene B. Highhouse is superintendent at mill. Executive offices of company are at 50 West Fiftieth street, New York, N. Y.

Metuchen, N. J.—The Celotex Corporation has active production under way at new plant at Metuchen, recently established, comprising a former existing mill, and completely modernized and improved. A large working force is being employed. The output is given over to several new specialties, which will be placed on the market soon, comprising a new insulation board about one inch thick, known as "Cemesto" board; a celotex board product, especially treated for cement factory floors; a new insulated roofing specialty, resembling tiling. Large production of these different specialties is planned. The local mill is said to represent an investment in excess of $1,000,000.

New Haven, Conn.—The New Haven Pulp and Board Company has awarded a number of subcontracts for completion of new boiler house at mill, on which work is now under way, previously referred to in these columns. An award for roofing and sheet metal work has been made to the George R. Cummings Roofing Company, Meriden, Conn.; and for glazing to the Wilkinson Glass Company, Meriden. The H. Wales Lines Company, Meriden, is general contractor. New unit is reported to cost over $50,000, with equipment. Frederick L. Smith, 21 East Fortieth street, New York, N. Y., is engineer.

Chicago, Ill.—The United Paper Box Corporation, 737 North Kedzie avenue, has been organized recently with capital of 500 shares of stock, no par value, to manufacture paper boxes and containers, and will take over and succeed to the United Paper Box Company, address noted. The incorporators include A. I. Weber and M. L. Schwartz.

Rothschild, Wis.—The Marathon Paper Mills Company is interested in a new sulphite pulp mill to be constructed in the Thunder Bay District, vicinity of Port Arthur, Ont., by a new company known as the General Timber Company, and for which an agreement has just been consummated with the Provincial Government. The new mill will comprise several large one and multistory units, and is estimated to cost in excess of $5,000,000, with machinery. It will be equipped for an initial capacity of about 200 tons per day. Entire output will be used by the Marathon company. It is proposed to have the new mill ready for service in 1938.

Hull, Que.—The E. B. Eddy Company, Ltd., has plans for a new continuous stream pipe line between its upper and lower paper mills, consisting of an 8-inch diameter pipe, running on a substructure

of concrete. Installation is estimated to cost close to $35,000.

New Companies, Etc.

New York, N. Y.—The Sanitary Products and Paper Company, Inc., has been chartered with capital of 200 shares of stock, no par value, under New York laws, by interests at San Francisco, Calif., represented by Pillsbury, Madison & Sutro, Standard Oil Building, San Francisco, attorneys. New company will manufacture and deal in paper goods of various kinds.

Kalamazoo, Mich.—Kalamazoo Office and School Supply Service, Inc., 124 West South street, has been formed with capital of 100 shares of stock, no par value, to deal in paper products of various kinds. New company is headed by L. V. Nichols, Battle Creek, Mich.

Los Angeles, Cal.—The Marathon Paper Mills Company, Rothschild, Wis., manufacturer of wrapping and other paper stocks, manila board, etc., has taken out a charter under California laws, to operate in that State with capital of $750,000. C. C. Yawkey is president.

Chicago, Ill.—The Lawrence Envelope, Inc., has been incorporated with capital of 100 shares of stock, to manufacture and deal in envelopes and kindred paper products. New company will take over and succeed to the Lawrence Envelope Company, 356 South Pulaski road.

Boston, Mass.—The Boston Seal and Label Company, 287 Atlantic avenue, has been incorporated with capital of 300 shares of stock, no par value, to manufacture and deal in paper labels and kindred paper specialties. Frank Gainsboro is president; and Samuel Manaster, treasurer, both of Boston.

Wilmington, Del.—The Wood Pulp Soda Company, Inc., care of Charles G. Guyer, Equitable Building, Wilmington, attorney and representative, has been chartered under state laws with capital of $100,000, to manufacture and deal in wood pulp.

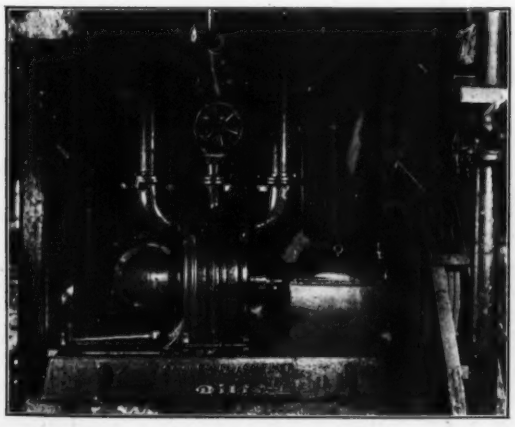
Installs More Dilts Equipment

The Ohio Box Board Company is continuing to expand and improve its stock preparation equipment for producing filler and liner stock.

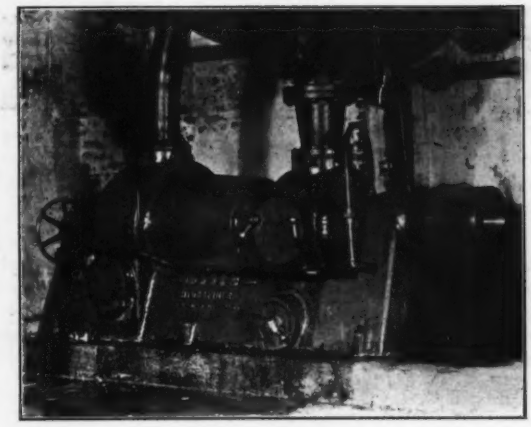
This company now has three Dilts Cowles Classifiners for the preparation of mixed paper stock and the fifth Dilts Hydrafiner purchased by this company is now being installed. These Hydrafiners are being used especially for the preparation of liner stock.

With this equipment, the Ohio Box Board Company will be able to step up its production considerably and reduce stock preparation costs.

The illustrations shown here are installations of both the Dilts Cowles Classifiner and the Dilts Hydrafiner as assembled in the plant of the Ohio Box Board Company at Rittman, Ohio.



DILTS COWLES CLASSIFINER.

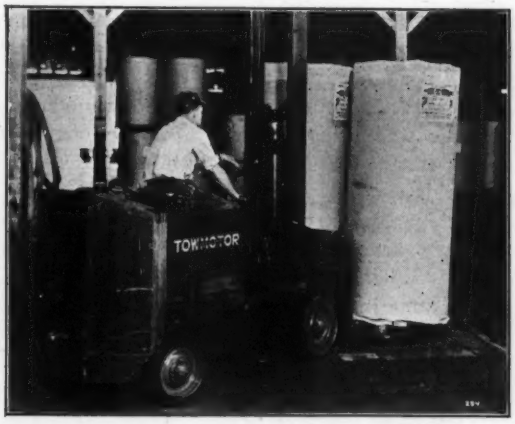


DILTS HYDRAFINER.

Towmotor Lift Truck for Paper Handling

The Towmotor Company announces a new high mast lift truck designed for handling rolls of paper on end. This truck has a lifting capacity of 6,000 lbs. Most paper handling of this character is done with the use of skids on forks or flat scoop.

This unit is built with the standard Towmotor chassis, standard power plant, etc. The driving wheels are under the load for better traction. With rear steering, the operator can pivot on either front driving wheel for short turns and quick maneuvering in close quarters. It has a maximum gasoline consumption of one-half gallon per hour and the driver sits on top of the machine in full view of the material being handled. The hydraulic elevating mast also tilts forward and backward, while the machine is designed with high speed both forward and reverse. It is manufactured by Towmotor Company, 1220 E. 152nd street, Cleveland, Ohio.



NEW HIGH MAST LIFT TRUCK.

PAPER TRADE JOURNAL
ESTABLISHED 1872

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COMING EVENTS IN THE PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY—Fall Convention, DeSoto Hotel, Savannah, Ga., Oct. 18-20, 1937.

NEW ENGLAND SECTION, Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION, Technical Association of the Pulp and Paper Industry—Fourth Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION, Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION, Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park-American Hotel, Kalamazoo, Mich.

INVENTIONS IN INDUSTRY

After a series of studies on the relations of inventions to employment and living standards, the Machinery Institute asserts that America's future progress will be very closely linked with the free development and use of inventions in its industries.

The average industrial worker in the United States uses 4.86 horsepower of equipment as compared to 2.67 in Germany, 2.56 in Great Britain and 2.14 in Italy, according to reports from the International Labor Office, Geneva, Switzerland, cited by the Institute. Real wages, according to the same source, were 160 per cent higher in the United States than in Germany, 90 per cent higher than in Great Britain, and 387 per cent higher than in Italy.

The Institute found a close relationship between economic well being and use of inventions in the various states of the Union as well as in nations of the world.

"Michigan, where aggressiveness in developing new inventions and instituting technological improvements, is probably greatest, has the highest weekly factory wage in the United States, according to Department of Commerce reports," the Institute states. "In per capita income, New York, due to concentration of financial activity in New York City, ranks first, but it is followed next by Connecticut which with Rhode Island is at the top in industrialization, measured by relation of manufacturing income to total income. Rhode Island's per capita income is exceeded by only three other states, one of which is California whose motion picture stars owe their fortunes to technology.

"Mississippi, an agricultural state, which has the lowest per capita income in the nation, ranks at the bottom in percentage of farms equipped with tractors and almost at the bottom in per capita horsepower used by its industries."

Referring to the 450,000-word report on "Technological Trends and National Policy," by the National Resources Committee and proposals to set up a national planning board to regulate inventions and mechanical progress, the Institute states:

"History has proved that society has more to gain than lose by freedom in the development of inventions and their application. Desirable as it might be to foresee the development of an invention, experience indicates that this is impossible, to say nothing of planning for the unpredictable results. Even the scientists themselves admit that those who have been considered most competent to judge the future of inventions have been wrong about as often as uninformed guesses would have been. Incalculable damage would be done if society had a method of officially vetoing the 'hunches' of such men as Edison and Ford.

"The most common fallacy in connection with technological development is to assume a direct relationship between productivity of a new machine or process and employment.

"Since the beginning of the century output per worker in the iron and steel industry has increased more than 60 per cent, but instead of employment declining it has increased more than 100 per cent. There are machines enough in the American textile industry to spin more yarn and weave more cloth than could be made by all the women in the United States using the methods of Colonial housewives. Yet there have been more workers employed in the textile industry in recent years than ever before in history."

Increased output per worker, the Institute stated, has increased wages more than 100 per cent since 1914, and a study by the Institute of prices of 20 widely-used Machine-made commodities in terms of wages showed that the 1937 consumer enjoys a 62 per cent advantage over that of 1914.

NEWSPRINT PRODUCTION GAINS

Production of newsprint in Canada during July, 1937, amounted to 314,529 tons and shipments to 301,850 tons, according to the News Print Service Bureau. Production in the United States was 78,205 tons and shipments 79,759 tons, making a total United States and Canadian news print production of 392,-

734 tons and shipments of 381,609 tons. During July 30,093 tons of news print were made in Newfoundland, so that the total North American production for the month amounted to 422,827 tons. Total production in July, 1936, was 375,369 tons.

The Canadian mills produced 335,157 tons more in the first seven months of 1937 than in the first seven months of 1936, which was an increase of nineteen per cent. The output in the United States was 14,752 tons or two and eight-tenths per cent more than in the first seven months of 1936, and in Newfoundland 25,282 tons of thirteen and eight-tenths per cent more, making a total increase of 375,191 tons, or fifteen and one-tenth per cent.

Stocks of news print paper at Canadian mills were reported at 79,993 tons at the end of July and 13,090 tons at United States mills, making a combined total of 93,083 tons compared with 81,958 tons on June 30, 1937.

Edgemont Paper Co. to Start October 1

YORK, Pa., August 9, 1937—The Edgemont Paper Company, Inc., is building a paper mill at Louck's Mill Road. The mill will be equipped with a combination fourdrinier and cylinder, trimming a sheet 60 inches wide. The used paper machine as well as the majority of the equipment in the mill was sold the company by the Gibbs-Brower Company of New York.

The mill, which is expected to start about October 1, will manufacture light and heavy weight coarse papers. The production will be about 15 tons daily. Steam and electric power will be used.

The Edgemont Paper Company is incorporated under the laws of Pennsylvania. The officers are: George E. Gartman, president; John U. Wisotzkey, vice-president; and Mrs. Edna Gartman, secretary.

Heads Sauquoit Paper Co.

MILWAUKEE, Wis., August 9, 1937—Austin Ross, formerly of Milwaukee, has been appointed vice-president of the Sauquoit Paper Company, Inc., New Hartford, N. Y. He recently acquired the interests of Carl L. Spofford, former president.

Mr. Spofford has retired and is succeeded as president by John Ross, secretary and treasurer, who with Mr. Spofford founded the firm in 1906. The company has a capacity of four carloads of paper daily. Austin Ross was connected with several investment houses in Milwaukee before leaving to make his home in Utica, N. Y.

Argentina To Expand Paper Industry

According to a press dispatch from Buenos Aires Argentina's largest paper manufacturing concern, Celulosa Argentina, has announced plans for a vast expansion of the industry which is expected to make the Republic completely independent of foreign suppliers.

The company is raising its capital from 5,000,000 pesos to 30,000,000 pesos in order to speed up production of all classes of paper, including newsprint, utilizing domestic raw materials almost exclusively.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES

Months	1937	1936	1935	1934
January	90.3%(c)	76.1%	65.8%	.....
February	90.1%(c)	77.9%	70.0%	.....
March	90.3%(c)	76.0%	70.5%	.....
April	92.1%(c)	82.3%	70.0%	.....
May	90.6%(c)	81.6%	69.4%	.....
June	87.4%(c)	80.7%	72.3%	.....
July	82.4%(c)	77.3%	64.9%	.....
August	.....	81.5%	70.9%	.....
September	.....	80.5%	71.9%	58.2%
October	.....	87.6%	75.6%	64.7%
November	.....	88.0%	75.3%	61.7%
December	.....	85.9%	71.2%	59.6%
Year Average	.....	81.3%	70.5%	.....
Year to Date First 31 weeks	88.8%(c)	78.8%	69.0%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1937		CORRESPONDING WEEKS, 1936	
*July 10	70.2%	July 11	75.6%
*July 17	88.3%	July 18	80.0%
*July 24	86.4%	July 25	80.3%
*July 31	84.6%	August 1	81.9%
*August 7	80.9%	August 8	80.2%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting, Current Weeks				
Ratio Limits	July 10, 1937	July 17, 1937	July 24, 1937	July 31, 1937	Aug. 7, 1937
0% to 50%	84	50	57	69	47
51% to 100%	229	260	254	231	154
Total Mills Reporting	313	310	311	300	201

* Subject to revision until all reports are received.
(c) Basic capacity data have been adjusted to correspond with ratings reported on January 4, 1937 Machine Improvement Survey.

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association, per cents of operation based on "Inch-Hours," were as follows:

Mos.	1937	1936	1935	1934	Mos.	1937	1936	1935	1934
Jan.	80%(e)	61%	61%	....	July	....	69%	59%	....
Feb.	86%(e)	67%	67%	....	Aug.	....	75%	65%	....
Mar.	87%(e)	68%	67%	....	Sept.	....	76%	69%	62%
April	89%(e)	70%	61%	....	Oct.	....	82%	76%	63%
May	86%(e)	68%	61%	....	Nov.	....	79%	70%	56%
June	75%(e)	68%	65%	....	Dec.	....	74%	60%	52%

Week end. July 10, 1937—44%
Week end. July 17, 1937—73%
Week end. July 24, 1937—74%
Week end. July 31, 1937—73%
Week end. Aug. 7, 1937—73%

(e) Basic figures revised to include new members of the National Paperboard Association.

J. F. Levens Heads Geo. W. Millar & Co.

At a meeting held August 10, 1937, James F. Levens was elected president of Geo. W. Millar & Co., Inc., paper and paper mill supply merchants of 284 Lafayette street, New York, N. Y., to succeed the late J. C. Mallalieu. Mr. Levens has been with the Millar organization for over 35 years and hitherto a vice-president of the corporation.

Louis C. Greenman was elected treasurer, also succeeding Mr. Mallalieu who held the office of president and treasurer. The previous officers were re-elected and J. C. Mallalieu, Jr., was added to the roster of the directors. The present officers are as follows: James F. Levens, president; Fred Bascom, vice-president; John J. Dillon, vice-president; Louis C. Greenman, treasurer; George W. Hall, secretary.

The directors are James F. Levens, F. W. Bascom, J. J. Dillon, C. K. Lloyd, A. L. Risley, L. C. Greenman and J. C. Mallalieu, Jr.

The firm of Geo. W. Millar & Co. founded in 1860 and incorporated in 1919, is one of the oldest established merchandisers of paper, twine and paper mill supplies in New York.

"Okay"!

And no wonder—for coming through this printer's press is one of those "better" printing jobs done on Zinc Sulphide Pigmented paper. Better because the reproduction of his type and delicate halftones is enhanced by the brilliant whiteness of the paper. Better, too, because the Zinc Sulphide prevents any shadowy "show through" from marring the easy reading, clean cut appearance of his work.

Cryptone and Albalith Zinc Sulphide Pigments can be advantageously used in practically all types of white paper. And they offer an economical means of producing more opaque, whiter and brighter papers that will please *everyone*—the dealer, the printer and the consumer.

Our Technical Service Staff will welcome an opportunity to discuss the application of these pigments to your papers.

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160 FRONT ST., NEW YORK

ZINC SULPHIDE PIGMENTS IN PAPER

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Adhesives

New Starch Adhesive for Corrugated Board. Hugo Krause. Papier-Ztg. 61, no. 89:1660-1661; no. 92:1746-1747 (Nov. 4, 1936).—The article contains a description of U. S. patent no. 2,051,025 (Aug. 18, 1936) granted to Jordan V. Bauer, and assigned to Stein Hall Manufacturing Company of Chicago. It covers the manufacture of laminated paper products such as corrugated paper board, the individual layers being bonded together with gelatinized starch solutions modified by oxidizing agents or other means. The adhesive is claimed to be superior to silicate of soda and to permit a substantially greater speed of manufacture at less cost.—C.J.W.

Adhesive for Paper and Tin-Plate. Gelatine, Leim, Klebstoffe 4:182 (1936); Tech. Bull. 14, no. 1:2 (1937).—Instead of using gum arabic to stick paper on to tinplate or galvanized iron, a mixture of 100 parts sodium silicate and 30 parts sugar can be used. After dissolving the sugar in water, it is diluted with boiled water according to requirements. Another adhesive is obtained by allowing 240 g. light-colored animal glue or gelatin to swell in water, and then bringing to the boil. To the hot solution is added 100 g. sugar, and the mixture is concentrated by boiling until a sample solidifies on cooling. The remainder is then dissolved in tepid water, and can be used like gum arabic. Among the starch adhesives, one suitable for sticking paper to metal is obtained from ordinary starch paste by adding 5 per cent of a solution of antimony hydroxide to which a little tartaric acid has been added.—C.J.W.

Air Conditioning

Air Conditioning in the Printing Industry. B. Adshead. British Printer 49, no. 291: 127-129 (Nov., 1936).—Many of the common difficulties encountered in the printing industry, such as curling and waving of the edges of paper, can be ascribed to unsuitable atmospheric conditions. Reference is made to the direct and indirect methods of air conditioning and a detailed description of the latter system is given.—C.J.W.

Correct Air Conditioning. Hans Diegmann. Correct air conditioning. Nitrocellulose 7, no. 11:201-202 (Nov., 1936).—The article describes in a general way the important factors to be considered in the installation of an air conditioning plant, without reference to any special system.—C.J.W.

Permanence

The Fastness to Light of Colored Papers. H. A. Harrison et al. Paper-Maker 91: TS 54-61, 64 (April 1, 1936).—Text of the first report of the Papermakers' Association of Great Britain's committee on a standard method of determining the fastness to light of colored papers. A progress report describing the work carried out over a period of 3 years, from which no definite conclusions are drawn or recommendations made, but which gives promise of finding a satisfactory solution. The most promising method investigated is quite novel and is based on: (1) measuring the amount of daylight or artificial light to which the samples are exposed, and (2) obtaining a series of graduated contrasts for comparison with the simultaneously faded samples. The work carried out to date on the method is described, and a brief survey is made of existing fading lamps, showing their merits and demerits.—A.P.-C.

The Preservation of Books and Papers. I. Paper. James Strachan. Paper-Maker 9: TS97-98 (July 1, 1936).—A brief discussion of the causes of deterioration of paper and of the methods of preventing acidity in sulphite papers.—A.P.-C.

The Preservation of Books and Papers. II. Binding. James Strachan. Paper-Maker 92: TS113-114 (Aug. 1, 1936).—A brief discussion of ancient and modern bookbinding and of the deterioration of leather bindings.—A.P.-C.

Pitch

Pitch and Pitch Troubles. L. E. Fitzgerald. Paper Mill 59, No. 45: 16-18 (Nov. 7, 1936).—A review of the various theories of the cause of pitch troubles in pulp and paper mills and of some of the more successful methods used in combating them.—A.P.-C.

A Pitch Problem and the Remedy. F. L. Zellers. Paper Mill 59, No. 51: 13, 20 (Dec. 19, 1936).—In one instance pitch trouble on the paper machine was overcome by using soft water instead of hard water (115 grains of total hardness per gallon) in the preparation of size emulsion.—A.P.-C.

Machinery

Ball and Roller Bearings in the Paper and Pulp In-

dustry. Hakon Woern. Papir-J. 24, No. 23:277-278, 280, 282, 284 (Dec. 15, 1936).—Reference is made to SKF bearings with which paper machines of many different types have been equipped. Their use, however, is not limited to the rolls and dryers of paper machines; they have also been successfully applied to beaters, grinders, suction rolls, chippers, etc.—C.J.W.

Digester. James Fletcher, assignor to The Babcock and Wilcox Co. U. S. pat. 2,064,901 (Dec. 22, 1936).—In order to obtain uniform movement of the liquor throughout a digester equipped with a circulating system a number of liquor-outlet sections, in the form of curved conduits, are mounted in different horizontal planes close to, but not in contact with, the digester shell, and are connected to a common header. The outlet sections of the conduits are located at the ends of the conduits remote from the common header, and the longer the flow of the liquor from the inlet to the header the lower the plane of the conduit in the digester.—A.P.-C.

Thickness Control in the Manufacture of Paper. Portals, Ltd., J. C. Marsden and J. Knaggs. Brit, pat. 455,606 (March 20, 1935).—The thickness of the web is controlled at the dry end of the paper machine by means of a photo-electric cell which operates in conjunction with the vertical movements of two rollers between which the web passes. The cell may start an alarm, or, alternatively, control the stuff or dilution water supply to the head box. —A.P.-C.

Stock Regulator. William P. Feeney. U. S. pat. 2,063,595 (Dec. 8, 1936).—Inlet and overflow compartments and a gate-controlled stock opening to the paper machine are so designed that when the stock in the inlet compartment becomes thick and there is a tendency for the hydrostatic pressure on the stock opening to build up, such tendency is avoided as the stock is free to flow unrestricted to the overflow compartment and back to the source of supply. The mere design, relative size and relationship of the compartments, in combination with the manually adjustable gate for varying the size of the stock-delivery opening, constitutes the means for regulating the flow and the consistency of the stock.—A.P.-C.

Apparatus for the Manufacture of Paper. James M. Murray, assignor to International Paper Co. U. S. pat. 2,062,471 (Dec. 1, 1936).—The invention provides a stock inlet constructed to constitute an elongated downwardly extending passage, the inlet end of which has a larger effective area than the outlet to ensure steady even flow. Adjacent the inlet end of the passage there is provided a drum type, perforated, rotating, flow evener. A perforated baffle extends diagonally across the head box from the top to the bottom thereof.—A.P.-C.

Flow Box Designs on Paper Machines. Wintermeyer. Papier-Fabr. 34, no. 50:490-495 (Dec. 13, 1936).—The article discusses the development of the different types of Voith stock inlets by means of diagrams and text with special reference to the Mason and Wardle Canadian patent 236,886 and the latest Voith construction, the high pressure stock inlet, covered by German and foreign patents. —C.J.W.

Method of and Apparatus for Working Paper Stock. Anton J. Haug. U. S. pat. 2,066,107 (Dec. 29, 1936).—This is an improvement on Haug's U. S. pat. 1,623,676, of April 5, 1927. For refining groundwood tailings the grinding rolls are grooved along the whole or part of their length and the mechanism for the separate driving of the rolls is dispensed with. A new packing is provided for preventing the stock from being soiled by the oil used for lubricating the journals of the rolls, and an improved lubricating system for the roll bearings is provided.—A.P.-C.

Continuous Cooking of Sulphite and Other Pulps. H. D. Wells. Paper Mill 59, No. 26: 75-79 (June 27, 1936). —A description of the APMEW digester-hydrafiner and its merits.—A.P.-C.

Centrifugal Pulp Screens. J. M. Voith & Co. Brit. pat. 451,821 (Nov. 28, 1935).—The net pressure forcing the pulp through the screen is finely adjusted by altering the height of an overflow weir above the apparatus. —A.P.-C.

Making Paper Come Clean. F. K. Becker. Paper Mill 59, No. 51: 15-18 (Dec. 19, 1936).—A brief review of trends and practices in dirt removal.—A.P.-C.

The Disc Refiner in Paper Making. Arthur S. Cosler. Paper Mill 59, No. 48: 15-20 (Nov. 28, 1936).—An explanation of the performance and merits of the double-disc refiner.—A.P.-C.

Refining Paper Pulp. W. W. Groves assignee of Cowles Engineering Corp. Brit. pat. 453,556 (Jan. 16, 1936).—Pulp suspension (e.g., partly disintegrated) is introduced on to the perforated base of a circular chamber. A high-speed impeller crushes the pulp against the base, producing a disintegrating and mixing action; the accepted stock passes through the perforations, and the rejected material is thrown centrifugally through outlets in the rim bounding the blades of the impeller.—A.P.-C.

Jordans and Refiners. John A. Wiener. Paper Mill 59, No. 36: 18-19 (Sept. 5, 1936).—An explanation of the difference between jordans and refiners.—A.P.-C.

The Calculation of the Camber of Machine Rolls. S. F. Smith. Paper-Maker 91: TS 86-92, 96 (June 1, 1936). —Mathematical.—A.P.-C.

Paper Finishing Machine. Frank C. Ladd. U. S. pat. 2,065,189 (Dec. 22, 1936).—Slip between the paper and linen when applying a linen finish to paper is avoided by passing the paper through a pair of iron rolls having an intermediate layer of semi-hard rubber and an outside layer of bakelite. The top roll only has a linen covering over the bakelite.—A.P.-C.

Correct Crown for Calender Rolls. E. H. Berges. Paper Mill 59, No. 46: 15, (Nov. 14, 1936).—A description of the unusual practice in the grinding of calender rolls.—A.P.-C.

Presses for Treating Fibrous Materials. H. N. Sköldkvist, Brit. pat. 454,073 (March 3, 1936).—Means for patterning the surface of finished fibrous board are claimed.—A. P.-C.

Some Aspects of the Work of the Finishing Department. D. McNeill. Paper-Maker 92, No. 6: TS184-187, 192 (Dec. 1, 1936); World's Paper Trade Rev. 106: 2016-2020, 2044-2048; 107: 20, 22, 66 (Dec. 18, 25, 1936; Jan. 1, 1937).—A discussion of the means to be taken to obtain optimum results.—A.P.-C.

Machine for Reclaiming Waste-Fiber. Charles N. McIntyre and Winfield E. McIntyre. U. S. pat. 2,064,024 (Dec. 15, 1936).—The white-water is passed through a save-all constructed in the form of a screen-covered, frustro-conical rotating drum, the inlet being at the small end and the outlet at the large end. Ribs are provided inside the drum to successively elevate portions of the liquid so that it may cascade and wash the fibers collected on the surface of the wire.—A.P.-C.

Process of Winding and Cutting Paper Into Sizes. Einar H. Janson and Johan O. Nauclér. U. S. pat. 2,066,566 (Jan. 5, 1937).—When different kinds of paper are to be cut into sheets, the different kinds of paper are wound on a number of rolls equal to (or a multiple of) the maximum number of rolls which can be inserted in the cutting machine and the rolls are loaded in succession with an equal number and equal quantities of the respective papers in the same sequence. The rolls are mounted in the cutting machine and the sheets from all the rolls fed simultaneously to the cutting mechanism.—A.P.-C.

Instrumentation Studies. XVIII

Rate of Penetration of Oil Through Paper

By The Staff of the Institute of Paper Chemistry

The measurement of the rate of oil penetration has been used to determine the ink receptivity of printing papers, as well as to determine the grease resistance of other papers. When measuring ink receptivity, a modification which gave more satisfactory results has been the test known as oil absorbency, a test that is carried out by coating the paper with a thin film of oil and noting the time required for the disappearance of the reflecting surface of the film. This test is subject to error from two sources: first, the results are very sensitive to the thickness of oil film applied and it is difficult to accurately control the thickness of this film; secondly, the end-point is determined visually and is not a sharp end-point and is thus subject to rather large error, especially between different operations. The advantage of an objective method which is not sensitive to small differences in thickness of oil film and which uses an end-point read by a meter is obvious. It is also valuable to have a measurement which can be used to measure the rate of penetration for any particular strata of the paper.

Apparatus and Results

The object of this investigation is to show that the rate of oil or grease penetration can be measured by the rate of change of transmission of diffuse light through the sample. The initial rate of penetration or the rate at any time during impregnation can be measured for animal, vegetable, and mineral oils.

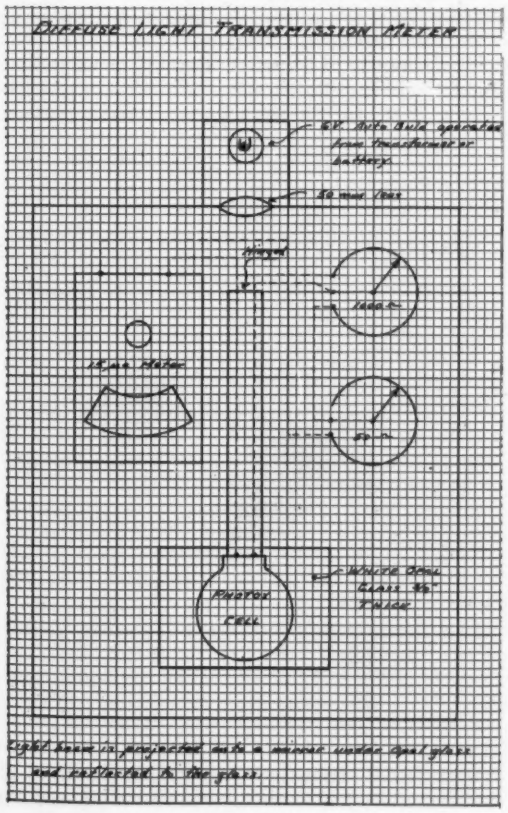

Fig. 1.

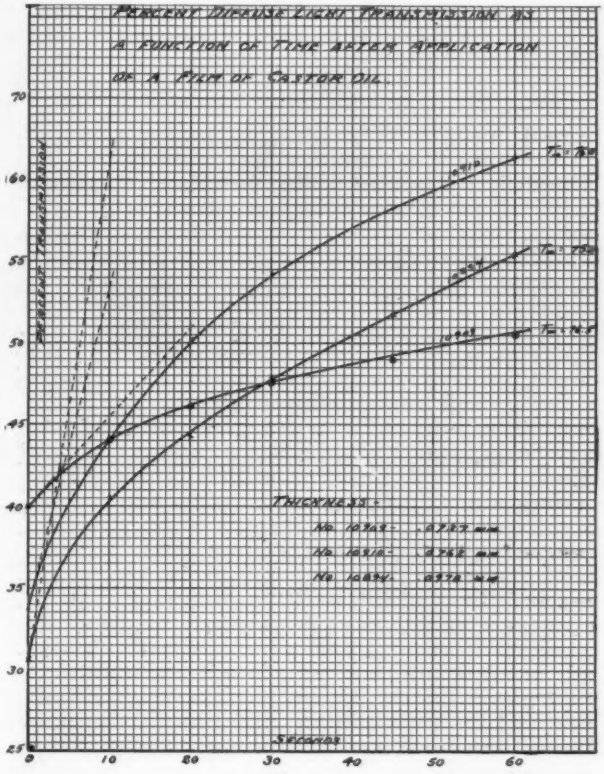

Fig. 2.

The instrument designed for this measurement (Fig. 1) consists of a light source and lens-mirror system with a diffusing medium of opal glass and a photocell which acts as a sample holder. The photocell is connected through rheostats to a microammeter as shown in Fig. 1. With no sample in place, the rheostats are adjusted so that the deflection of the microammeter is full scale (100 small divisions). When the sample is inserted, the meter will read the per cent of diffuse light transmission. The reason for using diffuse light transmission for such measurements will be shown later in the theoretical considerations.

In using the instrument the meter is set at 100, a sample is placed on the opal diffusing glass and the transmission is read. The photocell is then lifted and an oil film is applied by means of a small roller. The photocell is then lowered and transmission readings are taken at short intervals during the first 60 seconds (or until the change becomes small). After these transmission-time readings are secured, the sample is removed and laid away until thoroughly impregnated, when a final transmission is read. The curve, together with the final transmission and thickness of a sample, give sufficient data for computation of rate of penetration at any time after the oil was applied.

The curves in Fig. 2 were taken on supercalendered litho paper and those of Figs. 3 and 4 on CIS litho paper. Fig. 5 is derived from curve No. 1 of Fig. 2 and shows the rate of penetration as a function of time after application of the oil. The speeds plotted in Fig. 5 were computed by means of the formula given below.

As shown in the theoretical presentation, the rate of penetration is calculated from:

$$v = \frac{\left(\frac{dT}{dt}\right) d}{\left[\log_e \frac{T_\infty}{T}\right] T},$$

where T = transmission,
d = thickness in mm.,
dT/dt = slope of curve = rate of change of transmission, and
v = rate of penetration in mm/sec.

Calculations according to this formula give values of V_0 (initial rate of penetration) as follows:

Sample	Initial Rate of Penetration
10909 Supercal. litho	0.034 mm./sec.
10910 Supercal. litho	0.15 mm./sec.
10894 Supercal. litho	0.30 mm./sec.
10891 CIS litho	0.05 mm./sec.
10893 CIS litho	0.14 mm./sec.
10889 CIS litho	0.27 mm./sec.
Other papers gave values as follows:	
Offset printing	0.08 to 0.15 mm./sec.
M. F. and E. F. lithos	0.24 to 0.35 mm./sec.
E. F. book	0.50 mm./sec.

Theory

The problem is to find a simple equation by which the speed of penetration of oil through a sheet may be computed.

A film of oil is put on the upper surface of the sheet at zero time. The oil penetrates the sheet, rendering the layers through which it passes considerably more transparent. Consequently if light is incident on the sheet, the intensity of the transmitted light increases with time at a rate depending on v, the speed of penetration of the oil.

Since the rigorous analysis of this problem is exceedingly complex and the resulting equations would be too cumbersome for practical use, a simple, empirical approach to the problem has been attempted. It is feasible first to try the well-known exponential law of absorption. The absorption coefficient which appears in this law cannot be the true coefficient for the paper if the law is applied with-

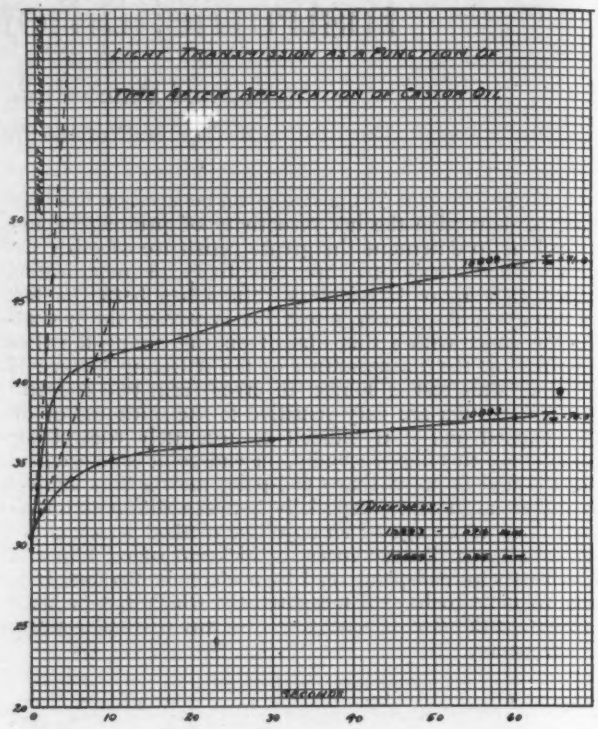

Fig. 4.

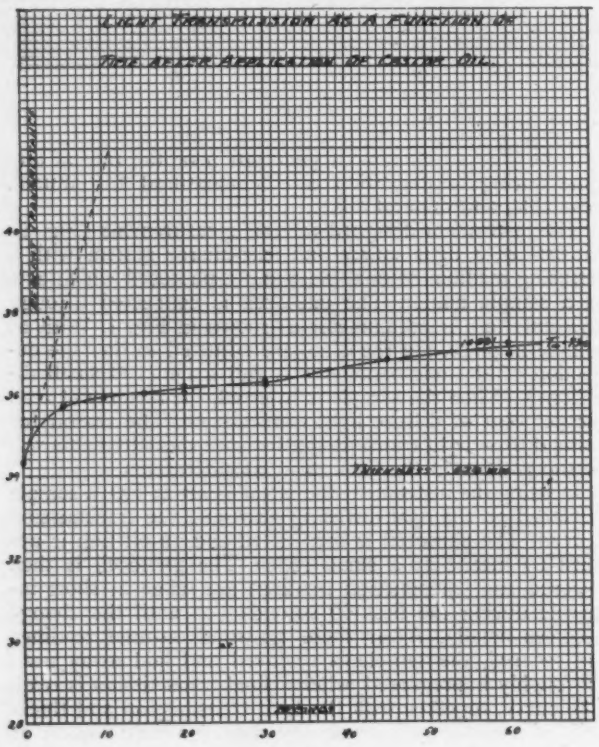

Fig. 3.

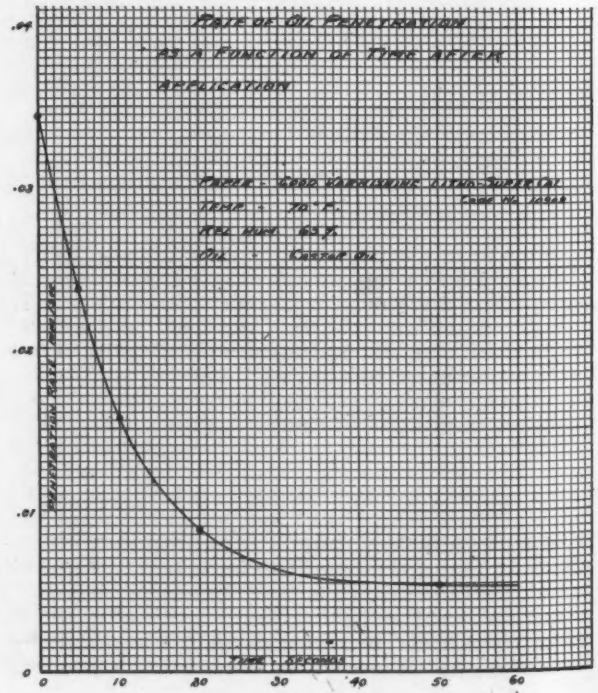

Fig. 5.

out regard for the multiple reflections which occur between the three surfaces, (1), (2), and (3), Fig. 6. Rather, the coefficient must be regarded as a measure of loss through true absorption, scattering, and reflection.

The exponential law cannot hold if the light incident on the sheet is anything but diffuse. The way in which light intensity in a medium falls off with distance depends on the spatial distribution of the light. Now, after passage through a short distance of paper, light becomes diffuse even when the incident light is parallel. Hence, the incident light should be diffuse if we wish the mathematical law, which expresses the way in which the intensity falls off with distance, to have minimum complexity.

Opal glass (Fig. 1) illuminated from below serves as a source of diffuse light. The paper sample is placed directly upon this diffusing glass, and the Photox cell rests upon the sample; nearly all of the light transmitted by the sample falls upon the cell.

If the exponential law holds, and if the illumination on the bottom surface of the sample is I_o, then the light transmitted by the sample is

$$I = I_o e^{-\mu d},$$

where μ is the over-all absorption coefficient and d is the thickness of the sample. It would be simple to test this law if sheets of paper of different thicknesses, identical in all respects (save for thickness), were available. Unfortunately, such sheets are not available. There are, however, other means of testing the relation.

Tests of the Exponential Law

The transmission of two or more sheets are measured. The sheets are then stacked and the transmission of the stack is measured. If the exponential law may be applied, the transmission of a stack should be equal to the product of the transmissions of the individual sheets. It was found that this condition is satisfied with good accuracy.

Example:

Four samples were cut from a sheet of bond paper. The individual transmissions were found to be: 0.600, 0.604, 0.608, and 0.595. The transmissions of stacks consisting of two, three, and four sheets were then measured. The measured and computed transmissions are compared in the following tabulation:

Transmissions of sheets in combination	Measured Trans. of Stack	Comp. Trans. of Stack
0.600 0.608	0.360	0.365
0.600 0.604 0.608	0.210	0.220
0.600 0.604 0.608 0.595	0.126	0.131

The maximum error is seen to be 5 per cent. It is significant that the error diminished in going from three sheets to four sheets (from 5 per cent to 4 per cent); inadequacy of the law would be evidenced by an increasing error with increasing number of sheets.

Several other measurements on various papers taken in combination check with good accuracy the above rule that the transmission of a pile is equal to the product of the individual transmissions.

Now a pile of sheets of summed thickness d is not the same as a single sheet (of the same structure and density) of thickness d, because of the air-paper interfaces between the sheets. Consequently, the above tests are necessary but not sufficient tests of the exponential law.

An estimate of the order of error introduced by the air-paper interfaces between two sheets can be drawn from the following test. The transmission of two sheets taken together is obtained and compared with the transmission obtained after a drastic optical change is produced at the interfaces. Such an optical change may be effected by joining the two sheets together with clear rubber cement. (Rubber cement would seem to be ideal for this purpose since it does not penetrate the paper appreciably; it makes intimate contact, and absorbs very little light when in the form of a thin layer). The following tabulation gives the measured transmissions of two pairs of samples taken first with nothing but air between the inner surfaces, then with rubber cement between the surfaces.

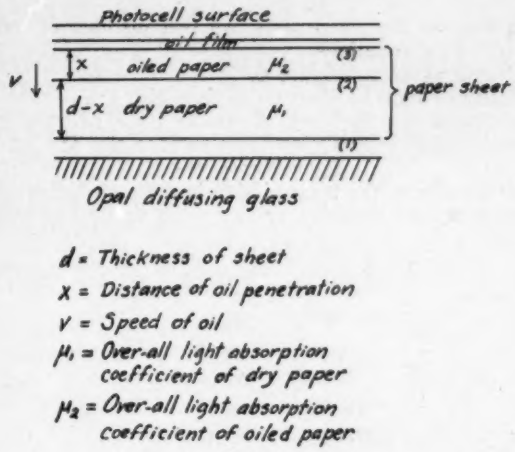

FIG. 6.

Transmission of sheets in combination	Transmission of pair with and without cement		Computed Transmission
	Without	With	
0.592 0.600	0.360	0.365	0.355
0.243 0.240	0.061	0.061	0.058

It will be noticed that a thin layer of rubber cement between the sheets of the more transparent paper increased the transmission 1.4 per cent, while no appreciable change was produced by the cement between the less transparent sheets.

We may conclude from this that the exponential law applies with fair accuracy to the computation of transmission as a function of thickness.

Now as oil penetrates a sheet, a fairly transparent layer of thickness x (Fig. 6) is formed above a layer of the original paper of thickness $(d\text{-}x)$. Does the law apply to two layers of such marked difference in transparency? If it does, the transmission of the combination should be equal to the product of the individual transmissions. This was tested by measuring the transmissions of a dry sheet, a similar sheet thoroughly impregnated with castor oil, and the combination of the two sheets taken together, the oiled sheet being *above* the dry sheet. Similar measurements were obtained for a bond and glassine combination. The measured and computed transmissions are given below.

Transmissions of sheets in combination	Measured Transmission	Computed Transmission
0.855 (oiled sheet) 0.59 (dry sheet)	0.503	0.504
0.854 (glassine) 0.59 (dry sheet)	0.505	0.504

The agreement between the measured and computed values of the transmissions of the pairs is seen to be very good. When the oiled paper or glassine is placed *below* the dry sheet, the agreement is lacking. The presence of the opal glass as a white reflector (as well as a diffuser) is undoubtedly necessary to the validity of use of the exponential law.

In view of the above tests, we feel justified in writing the following equations.

Referring again to Figure 6,

Intensity of light incident on surface No. 1: I_0

Intensity of light incident on surface No. 2: $I_0 e^{-\mu_1(d-x)}$

Intensity of light emerging from surface No. 3:

$$I_0 e^{-\mu_1(d-x)} e^{-\mu_2 x}$$

By definition, the transmission is the ratio of emergent to incident light intensity, or

$$T = e^{-\mu_1(d-x)} e^{-\mu_2 x} = e^{-\mu_1 d} e^{(\mu_1-\mu_2)x}.$$

But $e^{-\mu_2 d}$ is the initial transmission of the sheet, T_{01}. Therefore

$$T = T_0 e^{(\mu_1-\mu_2)x}$$

and $$\frac{dT}{dt} = T_0(\mu_1-\mu_2)\frac{dx}{dt} e^{(\mu_1-\mu_2)x},$$

or $$\frac{dT}{dt} = (\mu_1-\mu_2)\, vT;$$

or the slope of the transmission-time curve is equal to the difference between the absorption coefficients before and after oil penetration, multiplied by the speed of penetration of the oil and the transmission at the time under consideration.

Now $T_0 = e^{-\mu_1 d}$,

and $T_\infty = e^{-\mu_2 d}$,

where T_∞ is the final transmission. Hence,

$$(\mu_1-\mu_2) = \frac{1}{d}\log_e \frac{T_\infty}{T_0}.$$

Finally, then

$$v = \frac{\left(\frac{dT}{dt}\right) d}{T \log_e \frac{T_\infty}{T_0}}. \qquad (1)$$

This equation gives the speed of penetration of the oil at any time. To compute the speed at a given time, it is necessary to know: (1) the thickness of the paper, (2) the initial transmission, (3) the final transmission, and, from the transmission-time curve, (4) the slope of the curve at the given time, (5) the transmission at the given time. If one wishes only the initial speed of penetration, it is only necessary to measure d, the initial transmission T_0, and one or two T values a short time after the application of the oil; the paper is then set aside, and, several hours later, T_∞ is measured. From T_0 and the one or two T values, the initial slope $(dT/dt)_0$ is obtained. Then the initial speed is given by

$$v_0 = \frac{\left(\frac{dT}{dt_0}\right)^1}{T_0 \log_e \frac{T_\infty}{T_0}}. \qquad (2)$$

This equation is a special case of equation (1). In both equations, if d is measured in inches, v is in inches per second; if d is measured in millimeters, v is in millimeters per second, etc.

It has been tacitly assumed in the foregoing that the oil or grease progresses through the paper with a plane front. Actually, of course, this is far from the case, and equation (1) gives the speed of the average oil front. Further, the accuracy of equation (1) is limited by the accuracy of application of the exponential law of light absorption; it is believed, however, that errors introduced by the assumptions made in the foregoing treatment are of the same order as the normal variations of paper samples.

Summary

An instrument for measuring the total, diffuse light transmission of papers has been constructed. The arrangement is such that an oil or grease film may be applied to the paper, and transmission may be measured as a function of time after application of the film. Rates of oil penetration may be computed, and illustrative figures are given.

The design of the instrument is based on the finding that the exponential law of light absorption obtains when the paper is illuminated by a white, diffusing opal glass in immediate contact with the paper. Tests which justify the application of this law are given, and a formula for computing oil penetration speed is derived.

Four Men Own Brown Co. Common

At the end of last year four men owned the entire 400,000 common shares of Brown Company, the big Maine and Quebec pulp producer which is expected soon to reorganize. They are brothers, the sons of William Wentworth Brown, who was largely instrumental in developing the company in the latter half of the last century. The four men now constitute the company's board of directors.

Holdings of the common stock at the end of 1936 were as follows: Herbert J. Brown 134,140 shares, Orton B. Brown 117,500 shares, William R. Brown 80,860 shares and Downing P. Brown 67,500 shares.

Ownership may now be altered, as agreements have been made by members of the Brown family disposing, or to dispose of a portion of their holdings of new common which they would receive under the proposed reorganization plan as filed with the District Court at Portland. New York interests are understood to be the prospective purchasers of the new common. This sale has been arranged to permit a broader market for the new common and is conditioned upon confirmation of the plan.

By the proposed reorganization plan the 400,000 present common shares would be split five-for-one, making 2,000,000 outstanding. Of this amount, 100,000 would be retained by the company for distribution to holders of the present preferred stock. Not only would the members of the Brown family thus sell some of their common, and waive receipt of 5% of their new stock, were the reorganization plan carried out along lines proposed by the company, but also provision would be made for 745,000 shares of additional common into which the proposed new Canadian bonds and convertible notes might be converted.

Has Small-Scale Paper Mill

A small-scale paper mill, virtually complete in every detail of paper manufacturing, is incorporated in the facilities of the University of Washington's new $1,200,000 chemistry-pharmacy building which has recently been opened, and which will be utilized when the fall term commences in October. With many graduates of the University taking jobs in Northwestern mills every year, the need for research facilities in pulp and paper manufacturing has long been felt by Dr. H. K. Benson, head of the University's chemistry department. The mill will be one of the unique features of the new science building, to be known as Daniel Bagley Hall.

Pulpwood Cut in New Brunswick

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., August 18, 1937 — The total cut of pulpwood on Crown lands and on granted lands during the summer of 1937 will reach about 750,000 cords, which in board measure would be the equivalent of 350,000,000 superficial feet, according to estimates confirmed by the Department of Lands and Mines of the Province of New Brunswick.

Studies Upon Smoothness, Porosity and Printability of Paper with New Methods for Determination*

By Frank M. Williams[1]

Abstract

1. Barometric pressure as well as the temperature and humidity conditions is an important function of all smoothness testers of the air flow type.

2. Standard permanent test plates should be available for checking any smoothness testing instrument.

3. In our opinion, tests made upon samples under an annular compression area, the largest practical outside and inside diameters for a given area, annular are desirable.

4. In specifying a definite compression area, both the inside and outside diameters of the limiting circles should be given.

5. By using square clamping plates, smoothness and plane porosity tests may be made upon a sample with an air flow of equal velocity over the entire surface of the sample tested.

6. It is possible by means of square test plates to make smoothness and plane porosity tests both in the machine direction and across the sample.

7. It is possible to correlate the readings upon the Williams instrument with that of the Bekk when these are taken under carefully controlled conditions.

8. Smoothness and plane porosity tests give valuable information as to the printability of paper.

It is not our claim that these studies are either exhaustive or final. They are designed more to be suggestive of the large amount of work yet to be done on this important subject.

Possibly more thought and attention is now being given to the matters of smoothness or finish, density and formation of paper as related to printability, than to any other phase of paper testing. It is also true that the fundamental knowledge of basic facts underlying these principles, is comparatively meager.

It is possible that the following studies of some of these fundamental principles which we do not claim as by any means exhaustive, may be of interest.

Attempts at the measurement of surface smoothness of paper have been along the following lines.

1. Measurement of gloss or reflected light at various angles.

Typical in this regard would be the glarimeter. It has, however, been found in practice that a high polish is not necessarily a measure of surface smoothness as the surface of the paper may be covered with a series of indentations or depressions of varying diameter and depth and still give a high gloss by calendering.

2. Determination of smoothness by measurement of friction when two surfaces of paper are moved in contact with each other. The principal objection to this method, is that the difference in friction between two papers of a comparatively smooth and rough finish, is small and therefore would not be applicable to a wide range of smoothness in paper. The nature of the surface, talc filler, etc., affect friction.

3. Visual observation of surface smoothness by means of prisms and polarized light. This, of course, gives no permanent record or numerical data. The same objections would hold true regarding visual examination of surface smoothness by means of a stereoscopic microscope.

4. In struments for measuring the smoothness of paper of the air flow type in which is noted, the time in seconds required to pass a definite volume of air at a given pressure either between a single sheet of paper, one side of which is pressed at a definite pressure, against a polished surface. The Bekk and Gurley instruments are examples of this type.

A third instrument of the air flow type, is the Williams, in which is noted, the time in seconds which is required to pass a given volume of air at a definite pressure, between the two folded surfaces of the sample of paper held in contact with each other at a definite pressure upon a definite area, represented by an annular ring 2 inches outside, 1 inch inside diameter.

It is with this latter instrument, as well as comparison of its behaviour with some other instruments, that the following studies are particularly devoted.

Description of Williams Tester

In order that the following observations may be more clearly understood, it is necessary to give a brief description of the Williams instrument and its operation.

It will be seen from the illustration that it consists of a base in which a vertical outside cylinder is inserted. Inside and concentric with this, is a ⅛ inch pipe reaching practically to the top of the outside cylinder, this being connected with the sample clamp furnishes a means of conducting the compressed air to the sample. The annular

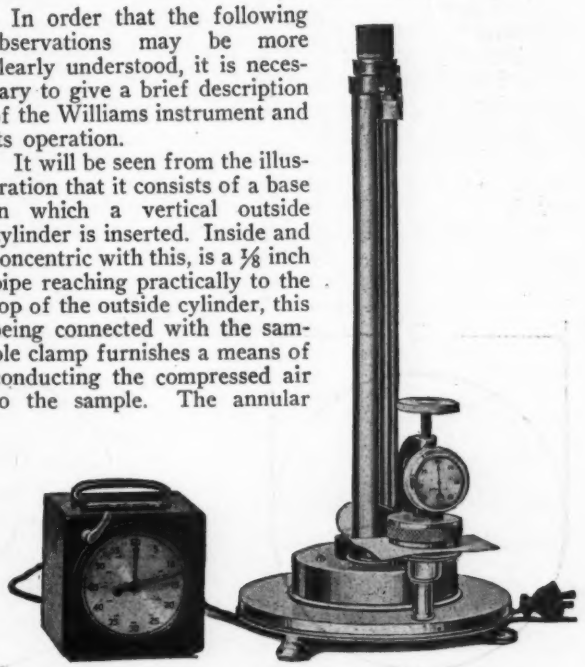

FIG. 1

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 22-25, 1937.

[1] Member TAPPI, President, Williams Apparatus Company, Watertown, N. Y.

space between the ⅛ inch pipe and the large outside cylinder, forms a mercury reservoir. A third, movable cylinder, open at the bottom end, is inserted in this annular space.

In the first or starting position, the movable cylinder is raised to a stop at a height slightly above the surface of the mercury. After the sample of paper has been clamped in position, this middle cylinder is forcibly pressed down into the mercury as far as it will go and is held in this position by means of a friction ring in the top cap covering the outside cylinder.

This operation elevates the mercury in the outside cylinder to a definite height. On the front side of the outside vertical cylinder and connected with it, at a point below the mercury level, is a side tube in which the mercury rises to the same height as inside the large cylinder. Inside of this side tube, is an adjustable wire contact point extending a definite distance below the surface of the mercury when this is at its highest level. As the level of the mercury lowers by relief of air pressure due to passing out between the folded surfaces of the sample, the end of the contact point is finally reached and the circuit broken which automatically stops a telechron clock. The clock was automatically started when the mercury was elevated by pushing down the middle cylinder.

The working principles, as well as method of manipulation of this instrument, may be briefly summarized as follows:

Insert folded sample of paper having small center perforation to allow free access to the center area. Screw down rubber faced clamp until gauge reaches 30. Push down the center column as far as it will go, which operation starts the telechron clock and starts the test, after which no further attention is required until the end point of the test is reached, at which time, the telechron clock automatically stops. Read the elapsed time in seconds.

Standard Test Plates

In the development of this instrument, it was early realized that there should be some definite and permanent reference standard by which any instrument could be readily checked from time to time, also in order that all outgoing instruments should read exactly alike, and this, independent of obtaining uniformity by precise duplication of mechanical construction.

The difficulties of obtaining such a permanent reference standard are much greater than would at first be supposed.

A sample of paper would not be suitable for this purpose as it is well known that its surface smoothness as well as its other characteristics, change from time to time also with age.

After giving considerable thought to the subject, standard test plates were developed, described as follows:

These consist of two discs of plate glass 2 inches outside diameter, the upper plate Fig. 2 being a plain disc, the lower one Fig. 3 having a ½ inch hole in the center. Across the center of the lower disc, a line is etched with hydrofluoric acid. The depth of this line is controllable by time of the action of the hydrofluoric acid and determines the range in seconds of the test plates.

These two glass discs cemented together (Fig. 4) with the etched line between, are inserted in the sample clamp of the instrument and pressed together at the standard working gauge pressure. This arrangement affords a fine orifice for the uniform escape of air, much finer and more uniform than could be obtained by any drill and more satisfactory than can be secured by any needle valve means of providing a small orifice.

It has been found that these test plates made as above described, are not only consistent but are not affected by reasonable differences in clamping pressure and are only very slightly affected by changes in temperature. For example, a set of test plates reading 86 seconds at 70 deg. F., after being cooled down to 32 deg. F., gave consistent readings of 82 seconds. In other words, a change of 38 deg. F. in temperature affected the readings of the test plates only 4 seconds.

Variations in Readings of Air Flow Instruments

Air flow instruments are affected by barometric, temperature, and humidity conditions.

With this accurate method of checking the instrument with these standard test plates, it was found that on different days, with no change in the adjustment of the instrument, somewhat different readings were obtained on the test plates. We also found that on different days, instruments other than our own, showed differences in readings, and inasmuch as no accurate means of checking had ever before been available, these variations had either been unnoticed or were charged off to possible variations in the same sample of paper tested on different occasions.

In trying to find the answer to this problem, the matter of variations in barometric pressure from day to day, appeared to be the most reasonable.

It does not require a highly trained scientist to point out that a specified 10-cc. volume of air, means nothing unless the barometric pressure, temperature and condition of humidity, are specified. For example, 10-cc. of dry air at 30 inches barometric pressure and a given temperature of say 70 degrees, becomes only 9.3-cc. at 28 inches and

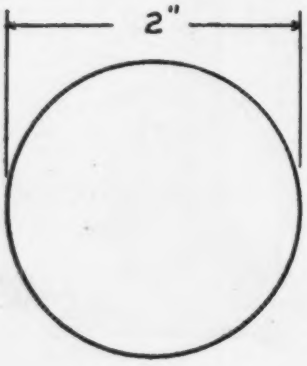

Fig. 2.

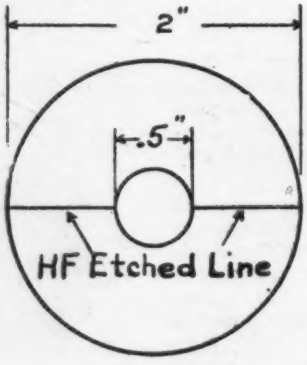

Fig. 3.

Fig. 4.

70 deg. F. If unaccounted for, this may represent a possible error of 7 per cent.

From this we conclude that barometric pressure is an important function in all smoothness testing instruments of the air flow type.

How to compensate for this? In instruments having no ready means for adjustment to changed atmospheric conditions, it appears the only method is by calculation to standard barometric conditions, the volume of air taken in connection with operating pressure conditions. Inasmuch as tests may be conducted, and are in the majority of cases, under standard conditions of temperature and humidity, it would appear that the barometric variation is possibly, the only important factor to be corrected.

With the Williams instrument, however, a ready means for mechanical adjustment is provided. The timing of this instrument is readily increased or shortened to conform to the readings of the standard test plates, by merely raising or lowering the contact wire, thereby changing its depth of immersion in mercury between the start and end point of the test.

Size and Form of Compressed Area of Sample

The exact specification of the clamped area of the sample, to be ten square centimeters, means nothing unless the shape and limiting dimensions of the clamped area are specified.

For example, in Fig. 5, the shaded area, 10 square centimeters, is approximately of the same dimensions of the Bekk anvil or compression area, whereas Fig. 6 also shows a compression area of 10 square centimeters. But glass plate, Fig. 5, on the same sample of paper at the same clamping pressure, one kilo per square centimeter and under the same conditions of barometer, temperature and humidity, may run as high as eight times the reading obtained on glass plate (Fig. 6) of the same area.

The following table gives the actual readings:

1. Sample paper—same in both cases.
2. Air pressure—same in both cases.
3. Compressed area—same in both cases.
4. Clamping pressure—same in both cases.

Smoothness Tests

SINGLE SHEET SAMPLE ON GLASS PLATE WITH SOFT RUBBER COVER

Plate Fig. 5	Plate Fig. 6
203 sec.	26 sec.
202	25
206	26
201	27
202	26
Average 203 sec.	26 sec.

We believe that a clamping ring of the larger internal diameter as in Fig. 6 is preferable to that represented in Fig. 5, because the velocity of air either passing the surface as in smoothness tests, or passing through the sample as in plane porosity tests, is more nearly the same at all points in the sample under test. Obviously, the velocity

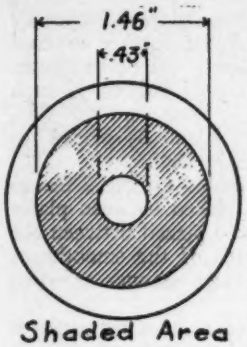

FIG. 5.

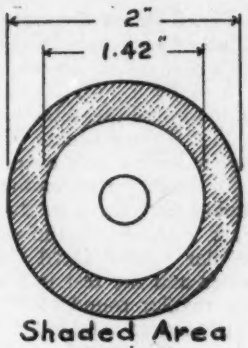

FIG. 6.

of air is much greater at a point near the center hole in Fig. 5 than in Fig. 6.

This also indicates that the flow of air is seriously affected by passing the constricted area limited by small diameter of center hole, (Fig. 5).

Imperfections of surface of sample if located at or near the edge of this small center hole produce most discordant results.

Further, the larger diameter of compression area, represented by Fig. 6, gives a greater area and consequently a better average of the surface of the sample tested. In addition to this, by the Williams method, with a folded sample, the area of the sample tested is doubled. This matter of testing the average surface conditions over the largest possible area of the sample is exceedingly important, as will be noted later in this paper.

If conditions were ideal in smoothness or porosity testing, air should pass all parts of the sample under test at the same velocity which would be illustrated by forcing air from one side to the other or through a straight strip of sample of say ½ inch wide and any definite length, say 2 inches.

The nearer the inside diameter of the circular area of the tested sample comes to the outside diameter, the more nearly this approaches the ideal test conditions of a straight narrow strip.

We have been able to secure these ideal conditions of straight strip testing by means of square clamping plates described as follows:

Square Clamping Plates for Measuring Smoothness and Plane Porosity with Air Flow of Equal Velocity Over Entire Surface of Sample Tested

Fig. 7 below, consists of a square of plate glass 2 inches by 2 inches with soft rubber cemented to one side.

FIG. 7.

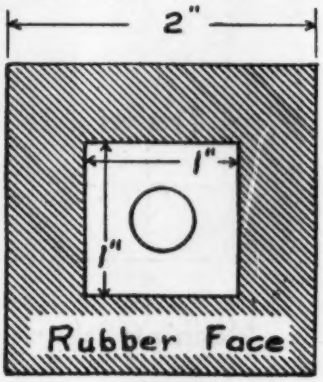

FIG. 8.

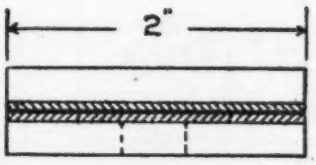

FIG. 9.

Fig. 8 shows a square piece of plate glass 2 inches by 2 inches with hole in the center and one surface covered with soft rubber having square hole cut out of its center 1 inch by 1 inch leaving a covering of rubber ½ inch wide around the outside.

Fig. 9 shows these plates, (Figs. 7 and 8) placed together with a hole on under side as in testing.

In making a smoothness test, a folded sample 2 inches square perforated in the middle is placed between plates Figs. 7 and 8 and the whole assembly placed between the regular rubber faced clamping plates of the smoothness tester and the test is made in the same manner as when our regular round plates are used.

Instead of a folded sample, two corresponding surfaces of the same sample may be clamped together. In case it is desired to make a smoothness test by pressing a single thickness of sample against a glass surface, it is only necessary to turn over plate Fig. 7, bringing the glass side in contact with the surface of the sample instead of the rubber side as previously described.

For making plane porosity tests, a piece of soft rubber with hole in the center, is inserted between the inside surfaces of the folded sample. In this way, all four surfaces of the sample are sealed with soft rubber, eliminating the smoothness test and forcing the air to pass out through the intercellular structure in the plane of the sample.

Square Clamping Plates May Be Used for Measuring Both Smoothness and Plane Porosity of Sample Both Machine Direction and Across

Fig. 10 shows square sample of paper which when tested for smoothness, either as a single sheet or as a folded sample, clamped between clamping plates, Figs. 7 and 8, gives a uniform air travel in four directions as indicated.

Fig. 11 shows a square sample of paper or preferably two samples cut to the same size and with corresponding surfaces in contact in which two of the sides of the sample to a depth of ½ inch have been sealed or made impervious to air by immersion in lacquer. Lacquer properly thinned has been found particularly well adapted to this sealing process as it effectively closes the pores of the paper sample and does not creep up by capillarity above the desired line.

When a sample treated as above described Fig. 11 is tested for smoothness between square clamping plates, Figs. 7 and 8, the air travel is limited to one direction, which in this case is the machine way of the paper.

Fig. 12 is a sample of paper or two sheets of the sample with corresponding surfaces together in which the two horizontal sides have been sealed with lacquer to a depth of ½ inch. When this sample is tested for smoothness or plane porosity in the regular manner between clamping plates 7 and 8, the air travel is now across the machine way of the paper.

It appears that this method of testing paper, not only for smoothness, but also for plane porosity both in machine direction of the paper and across it, gives very valuable information as to the felting or cross fibering of the sample of paper. When all of the fibers lie in practically the same direction, there is found to be a great difference between the plane porosity tests, machine way and across, the readings being much lower in the machine way than across. On the other hand, when the paper in its formation, is well felted and the fibers are well crossed, the difference in plane porosity is less when a comparison is made between machine way and across machine.

I do not know at this moment that we are ready to recommend the square clamping plates instead of our regular round ones for all general routine smoothness and plane porosity testing but they do afford a ready means for making smoothness tests and plane porosity tests both in machine direction and across machine direction but it does give the most theoretically accurate means of making these tests by causing the air flow to pass at uniform velocity, either over the surface or through the sample. It is true that tensile and tear tests, both with and across machine way, give valuable information. Why not the same in smoothness and plane porosity testing?

Can the Results Obtained Upon a Williams Smoothness Tester be Correlated with Those of the Bekk Instrument?

A number of duplicate tests were made upon the samples of paper varying in smoothness and plane porosity from kraft paper to highly finished super-calendered book. These tests were made upon both testers at the same time and under identical atmospheric conditions of barometer, temperature and relative humidity and the following correlation curve carefully plotted.

It is to be noted, however, that a sufficient number of tests should be made upon the Bekk instrument to give the same average of surface area of the sample tested, as is obtained upon the Williams instrument working with folded samples.

By way of illustration, in one case, it was noted that the Bekk instrument gave consistently a variation of 82 seconds on the same side of the same sample of paper at two different locations 2 inches apart and this when there was no visible imperfection in the sample. These

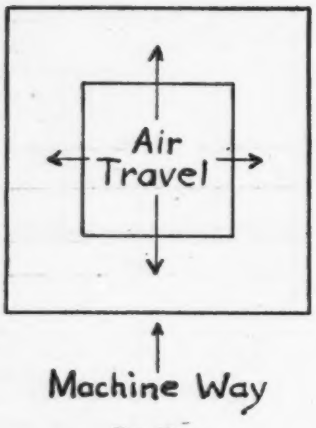

Fig. 10.

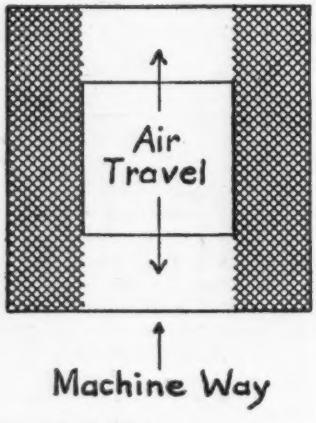

Fig. 11.

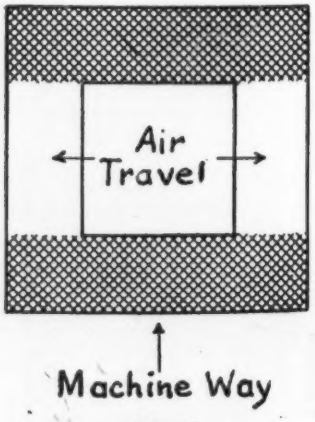

Fig. 12.

locations may be represented by positions X and Y Fig. 13 showing sample.

Smoothness and Plane Porosity as Related to Printability

That there is a definite relationship between these, is most apparent. We have invariably found after a large number of tests of samples upon which there were complaints as to printability that a smoothness and porosity test pointed to the cause of the difficulty. Sometimes the finish was not high enough. At other times, it was too high. Sometimes the paper was too dense to take the ink properly. In some cases, the sample showed a surface glazing or case hardening in calendering which rendered its printing qualities unsatisfactory.

Briefly, one case will illustrate this point. In the case of two newsprint samples marked 1 and 2, the smoothness and porosity tests were as follows:

Sample 1	Sample 2
Side A 17.2 sec.	33 sec.
Side B 18 sec.	26 sec.
Plane porosity 34 sec.	44 sec.

The printer claimed that sample 2 was a much more

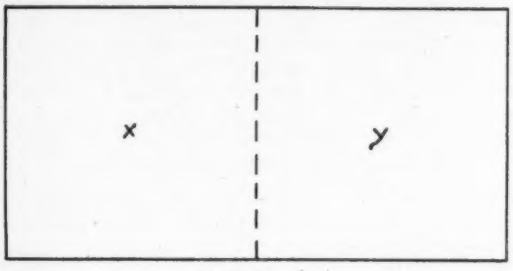

FIG. 13.

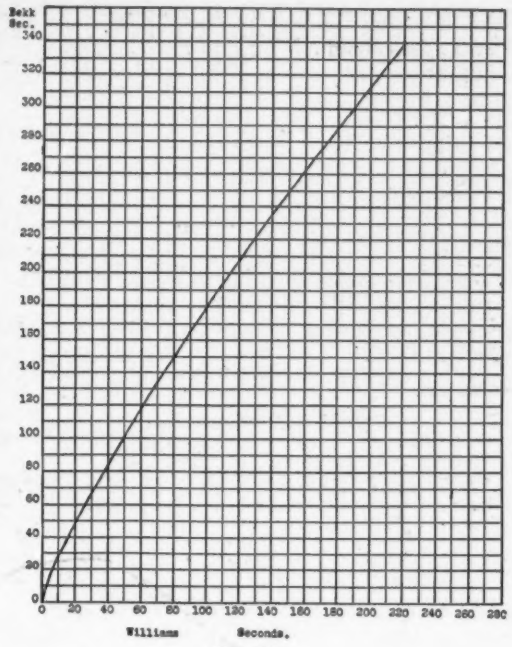

FIG. 14.

satisfactory printing paper as it took the ink better and the cuts showed up better. In this case, the smoothness tester showed that, not only was the finish better, but the porosity was not so high as to interfere with the ready absorption of the ink.

Colloid Milling Questions and Answers*

By H. L. Bullock[1]

This paper will be devoted to questions which have come up in the trade during the past year. The answers to these questions have been of interest to the individuals propounding them and should be of interest to the entire industry.

The most frequent question has been, "Will colloid mills be more widely used in the paper industry?" Our answer has been, "Yes," first, because of their economy of materials; second, because of the uniformity of their product; third, because of their economy of floor space; fourth, because of their continuous production feature; fifth, because new materials and new standards require their use; and sixth, because we have only scratched the surface in our study of the application of mechanical colloid chemistry to the processing of paper making materials.

Retention of Clay

The sixth reason cited above brings up a related question which has been asked by some paper men anxious to cooperate with colloid mill manufacturers. This question is, "What does the colloid mill manufacturer wish to find out in cooperation with the paper manufacturer?" The answer is, many things, for instance, going back of the coating operation to the formation of the sheet itself, "What is the effect of colloidal dispersion of the clay on its retention in the sheet. Are large aggregates of clay retained easier than fine completely dispersed particles? In other words, is retention due mainly to a filtering action of the fibers or is it due to an action of surface attraction between the fine fibers and the finely divided clay. There is a mass of evidence which suggests that clay retention is not as simple as the precipitation of a clay dispersion by an electrolyte in a test tube or the collection of clay on a filter paper. From the ceramic industry, we know that the amount of organic material in a clay water mix influences the colloidal dispersion of the clay very materially. If the difference in the amount of organic material in water in winter and summer influences clay retention and, if the best retention is obtained in summer when the amount of organic material is highest, then it is probable that the colloidal condition of the clay is the greatest single factor influencing clay retention. If this is proved correct, we can aid retention by the proper milling of the clay.

In the coating field we would like to know how much mechanical work we can do on a material such as calcium-carbonate and still have it an economical material for you to use. We would like to know whether you can control your coating weights accurately enough so that we can develop coating solutions of suitable viscosity, which will carry more solid and have less water to evaporate. We would like to know whether defoamers or levelers tend to form aggregates which cancel some of the dispersing work done by the colloid mill.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 22-25, 1937.

[1] Member TAPPI. The Premier Null Corporation, 50 Church St., New York, N. Y.

Another question, frequently asked, has been, "What is there new in the colloid milling field?" The past year has seen two developments which should be of interest. First, the quantity commercial production of lacquer emulsions in water and second, the grinding of pigments in the form of a heavy paste in solvents such as 2B alcohol, acetone, and liquid hygrocarbons. In the lacquer emulsion field an 8-inch mill powered with a 30 horse power motor will produce from 200 to 300 gallons of emulsion per hour. This emulsion will carry a much higher concentration of solids than it is possible to carry in a plain solvent mix and will flow much more freely. In the case of the heavy pigment pastes ground in alcohol or other solvents, such pastes provide a convenient source of color for making up non-water soluble coatings and speck free coatings of uniform color development result from the use of these pastes.

Colloid Mill Construction

"What should I look for in a colloid mill?" this question comes up many times. The answer is long and covers many points. First, investigate carefully the record and reputation of the manufacturer. Second, make sure that the mill is available in a range of sizes which will take care of all your production problems. Third, examine the construction of the mill carefully. There should be wide adjustment of the working clearance of the mill to adapt it to the economical production of all the dispersions necessary for your work. There should be adjustment provided for inevitable wear. The working surfaces should be arranged so that they wear evenly and with little change of contour. There should be no sharp cutting edges which can quickly lower the efficiency of the mill by becoming dull and rounded. Only high quality materials should be present. We suggest "Stellite" for the working surfaces; non-expanding steel of the "Invar" type for all supporting parts whose expansion or contraction might change the mill setting; Ni-resist for body parts exposed to dripping or sweating; enameled iron for body parts or paste type mills which must be frequently wiped clean of heavy sticky pastes; splash proof, constant speed, ball bearing motors; and the use of high grade "loaded" ball bearings in both motor and mill. The general construction of the mill should be such that there are no pockets to retain material from one batch to another. All working surfaces should be easily accessible for cleaning and inspection and the mill should flush out with a minimum of cleaning solution.

At about the time that the question of mill construction comes up, there is the related question, "What may I expect to accomplish with a colloid mill?" The answer to this question must depend to a great extent on conditions in your plant; the ratio of colored to white stock; and, most important of all, on the amount of experimental and development work which you are prepared to do with your coating formulae and methods of compounding in order to avail yourself of the full service of the mill.

Unless your compounding methods are very crude, it is hardly ever possible to get any startling improvements by merely adding a colloid mill to the production line just ahead of the coating machine. Points of application must be selected and definite improvements worked out. Thus to obtain the best results with calcium-carbonate, certain hard pigments and bronzing blues, it is usually necessary to grind the pigments in the form of a heavy paste. To obtain a saving in the amount of casein used, the mill may be used to thoroughly disperse the freshly cut casein or the same result may be obtained by processing the complete mix. In working with dyes they may be rapidly wet out and thoroughly dispersed in the mill before being added to the coating solution, but absolutely uniform development of color and freedom from spots and streaks can only be obtained by processing the coating solution.

As your development work with the mill progresses, you will find that the viscosity of the solution has changed and that you can change the amount of solids and the proportion of the various ingredients, usually with an economy of materials. In all cases you will find that cumbersome batch machinery can be done away with and that continuous production will give you many advantages.

"What about foam?" How many times has this question been asked and how many gallons of coating material have come from a colloid mill full of minute bubbles? The bubbles of air were there, but the mill did not introduce the air. If the inlet of the mill is kept supplied with liquid, if your supply lines are tight so that the mill can not suck air, if the discharge from the mill does not fall a long distance into a tank and create splash foam, you will have no trouble. In fact, I can demonstrate to you that a properly designed colloid mill will actually remove air from a coating solution, whether the air is present as bubbles or has been carried in by incompletely wet-out pigment. However, a word of warning is in order, if material full of air bubbles is delivered to the mill, some of the air will be drawn through the mill and the mill will disperse this air almost as efficiently as it disperses the clay or pigment. In this case a multitude of minute bubbles will be formed, which will separate very slowly.

After colloid mills have been eulogized for some time by a salesman, our last question is almost sure to develop. This question is, "Granting that the colloid mill is a valuable piece of equipment and one which produces really extraordinary results; why has its progress in the paper industry been slow in comparison with the textile industry, the leather industry, the ink industry, and the artificial leather industry?" There are two basic reasons for this, one favorable to your industry and one unfavorable. The favorable reason arises from the fact that your industry was using natural colloid material long before colloids were known as such. Your clays dispersed easily and acted as protective colloids in your mixes to maintain any dispersion which long working in your big batch machines could give you. This condition is not found in the other industries, they have always been sorely in need of improved processing apparatus. The unfavorable reason arises from the fact that most of your work is a one coat proposition and that in the application of this one coat, you have to insure coverage, color, gloss, printing quality, and a very definite weight. You can not use the three or four coats of the artificial or real leather manufacturer, you cannot rely on subsequent chemical treatment like the textile finisher. You must be right the first time.

Long years of experience with the old batch machines making up the coating solutions and with the conventional coating machines for applying the color, have developed rules of thumb, which work out fairly satisfactorily. Change the milling machinery and you must carefully check all the rest of your operations. This means that the economies and quality gains from improved milling must be very great to justify a change or demands for different and improved coatings, which can not be made with the old equipment, must make it necessary to purchase colloid mills and develop their proper use.

We believe that the economy in floor space, the saving of casein, the saving of pigments due to better color development, and the extreme uniformity of the coating solution will always justify the installation of colloid mills, where a real effort can be made to control the coating operation by rigid standards rather than by rule of thumb. We hope that you realize that we appreciate the problem which you have in making changes in milling equipment and that we can work together in producing improvement without loss.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports, of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING AUGUST 14, 1937

SUMMARY

Cigarette paper .....949 cs.
Paper hangings .....4 bls., 1 cs.
Newsprint .....5,408 rolls
Printing paper .....94 cs.
Wrapping paper .....2,068 rolls, 2 cs.
Packing paper .....25 rolls, 15 bls.
Filter compound .....20 bls.
Filter mass .....15 bls.
Filter paper .....110 bls., 36 cs.
Drawing paper .....7 cs.
Writing paper .....10 cs.
Photo paper .....9 cs.
Decalcomania paper ....10 drums (duplex), 4 cs. (simplex)
Decalcomanias .....18 cs.
Transfer pictures .....5 cs.
Tissue paper .....18 cs.
Colored paper .....6 cs.
Gummed paper .....3 cs.
Litho paper .....30 cs.
Straw boards .....211 rolls
Miscellaneous paper ..1,095 rolls, 571 bls., 985 pkgs., 231 cs.

CIGARETTE PAPER

M. Speigel & Sons Co. Inc., *Pr. Hayes*, Genoa, 67 cs.
Standard Products Corp., *Champlain*, Havre, 857 cs.
De Mauduit Paper Corp., *Champlain*, Havre, 2 cs.
Braustein Freres, Inc., *Champlain*, Havre, 23 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., *American Trader*, London, 4 bls., 1 cs.

NEWSPRINT

H. G. Craig Co., *A. C. D.*, Donnacona, 286 rolls.
International Paper Co., *G. T. D.*, Gatineau, 310 rolls.
Daily Mirror, Inc., *Heimgar*, Quebec, 3,697 rolls.
Perkins Goodwin & Co., *New York*, Hamburg, 454 rolls.
Lunham & Reeve, Inc., *Scanstates*, Kotka, 308 rolls.
Jay Madden Corp., *Scanstates*, Kotka, 353 rolls.

PRINTING PAPER

——, *American Trader*, London, 3 cs.
F. L. Kramer & Co., *American Trader*, London, 13 cs.
Japan Paper Co., *American Trader*, London, 2 cs.
E. Dietzgen & Co., *New York*, Hamburg, 73 cs.
Globe Shipping Co., *New York*, Hamburg, 3 cs.

WRAPPING PAPER

Guaranty Trust Co., *Norefjord*, Gothenburg, 596 rolls.
Lincoln Import Specialties Corp., *Norefjord*, Gothenburg, 1,472 rolls.
White, Lamb, Finlay, Inc., *American Shipper*, Belfast, 2 cs.

PACKING PAPER

F. C. Strype, *New York*, Hamburg, 25 rolls, 15 bls.

FILTER COMPOUND

——, *New York*, Hamburg, 20 bls.

FILTER MASS

A. Giese & Son, *New York*, Hamburg, 15 bls.

FILTER PAPER

E. H. Sargent & Co., *Norefjord*, Gothenburg, 15 cs.
——, *American Trader*, London, 2 cs.
H. Reeve Angel & Co. Inc., *American Trader*, London, 19 cs.
J. Manheimer, *Queen Mary*, Southampton, 110 bls.

DRAWING PAPER

H. Reeve Angel & Co. Inc., *American Trader*, London, 7 cs.

WRITING PAPER

Globe Shipping Co., *Queen Mary*, Southampton, 10 cs.

PHOTO PAPER

J. J. Gavin, *Queen Mary*, Southampton, 7 cs.
——, *Europa*, Bremen, 2 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., *American Shipper*, Liverpool, 10 drums (duplex), 4 cs. (simplex).

DECALCOMANIAS

Sellers Transportation Co., *Europa*, Bremen, 18 cs.

TRANSFER PICTURES

Rohner Gehrig & Co., *Europa*, Bremen, 5 cs.

TISSUE PAPER

M. Snedeker Corp., *American Trader*, London, 1 cs.
B. F. Drakenfeld & Co., *American Shipper*, Liverpool, 3 cs.
Steiner Paper Corp., *Nagara Maru*, Kobe, 2 cs.
S. Resnick, *Nagara Maru*, Kobe, 12 cs.

COLORED PAPER

D. C. Andrews & Co., *Europa*, Bremen, 1 cs.
International F'd'g. Co., *New York*, Hamburg, 5 cs.

GUMMED PAPER

——, *Europa*, Bremen, 3 cs.

LITHO PAPER

Senefelder Co. Inc., *City of Dalhart*, Hong Kong, 30 cs.

STRAW BOARDS

——, *Spaarndam*, Rotterdam, 211 rolls.

MISCELLANEOUS PAPER

The Borregaard Co. Inc., *Norefjord*, Gothenburg, 633 rolls, 502 bls., 985 pkgs.
——, *Champlain*, Havre, 25 cs.
A. Giese & Son, *Champlain*, Havre, 63 bls.
Coty Processing Co., *Champlain*, Havre, 2 cs.
——, *Nagara Maru*, Kobe, 36 cs.
T. N. Fairbanks, *Nagara Maru*, Yokohama, 12 cs.
Keuffel & Esser Co., *New York*, Hamburg, 36 rolls, 25 cs.
——, *New York*, Hamburg, 426 rolls, 6 bls.
Jay Madden Corp., *Scanstates*, Helsingfors, 30 cs.
Japan Paper Co., *Grete Maersk*, Kobe, 101 cs.

RAGS, BAGGINGS, ETC.

Chase National Bank, *Lensovet*, Leningrad, 2,707 bls. rags.
——, *American Shipper*, Manchester, 19 bls. paper stock.
Bank of N. Y. Trust Co., *American Shipper*, Manchester, 17 bls. paper stock.
G. A. Henshaw & Son, *American Shipper*, Belfast, 65 bls. paper stock.
Castle & Overton, Inc., *Black Eagle*, Rotterdam, 250 bls. bagging.
American Express Co., *Spaarndam*, Rotterdam, 234 bls. rags.
Keene, Inc., *Collamer*, Havre, 112 bls. rags.
——, *Collamer*, Havre, 55 bls. rags.
Castle & Overton, Inc., *Collamer*, Havre, 80 bls. rags.
Chase National Bank, *Collamer*, Bordeaux, 328 bls. rags.
Castle & Overton, Inc., *Collamer*, Bordeaux, 136 bls. rags.
E. J. Keller Co. Inc., *Collamer*, ——, 71 bls. rags.
——, *Silverbeech*, Bombay, 56 bls. rags.
Irving Trust Co., *Silverbeech*, Bombay, 140 bls. rags.
Banco Coml. Italiane Trust Co., *Grete Maersk*, Kobe, 53 bls. rayon waste.
Wertheimer Bag Co., Fort *Townshend*, Halifax, 103 bls. bagging.
Guaranty Trust Co., *American Trader*, London, 47 bls. old canvas.

HIDE CUTTINGS

American Express Co., *Scythia,* Liverpool, 392 bags.

OLD ROPE

Banco Coml. Italiane Trust Co., *Transylvania,* Glasgow, 57 coils.
Continental Bank Trust Co., *Silverbeech,* Bombay, 110 bls.

WOOD PULP

M. Sone, *Norefjord,* Gothenburg, 1,254 bls. wood pulp.
Price & Pierce, Ltd., *Norefjord,* Gothenburg, 375 bls. sulphite.
Perkins Goodwin & Co., *Norefjord,* Gothenburg, 196 bls. sulphate, 138 bls. sulphite.
Brown Bros. Harriman Co., *Dalhem,* Hernosand, 4,800 bls. sulphate, 800 tons.
Johaneson Wales & Sparre, Inc., *Dalhem,* Munksund, 200 bls. sulphate, 25 tons.
Johaneson Wales & Sparre, Inc., *Dalhem,* Obbola, 1,645 bls. sulphate, 235 tons.
Bulkley Dunton Pulp Co., *Dalhem,* ——, 2,775 bls. sulphite, 555 tons.
Bulkley Dunton Pulp Co., *Dalhem,* 2,250 bls. sulphate, 450 tons.
Perkins Goodwin & Co., *Dalhem,* Obbola, 450 bls. sulphite, 90 tons.
Bulkley Dunton Pulp Co., *Spaarndam,* ——, 634 bls. wood pulp.
——, *Vulcania,* Trieste, 200 bls. wood pulp.
M. Sone, *Vulcania,* Trieste, 634 bls. wood pulp.
M. Sone, *New York,* Hamburg, 575 bls. wood pulp.
——, *New York,* Hamburg, 2,362 bls. wood pulp, 658 tons.
——, *City of Fairbury,* Gefle, 125 bls. sulphite, 25 tons.
Tradesmans National Bank Trust Co., *City of Fairbury,* Norrsundet, 625 bls. sulphate, 143 tons.
Price & Pierce, Ltd., *City of Fairbury,* Wallvik, 570 bls. sulphate.
Price & Pierce, Ltd., *City of Fairbury,* Wallvik, 1,326 bls. sulphite.
Guaranty Trust Co., *City of Fairbury,* Hernosand, 1,200 bls. kraft pulp.
National City Bank, *City of Fairbury,* Hernosand, 600 bls. sulphite, 100 tons.
E. M. Sergeant Pulp & Chemical Co., *City of Fairbury,* Hernosand, 2,250 bls. sulphate, 375 tons.
Bank of N. Y. Trust Co., *City of Fairbury,* Hernosand, 900 bls. sulphate, 150 tons.
Price & Pierce, Ltd., *City of Fairbury,* Hernosand, 1,200 bls. sulphate, 200 tons.
Lagerloef Trading Co., *Scanstates,* Wiborg, 3,100 bls. sulphite, 620 tons.
Lagerloef Trading Co., *Scanstates,* Wiborg, 1,375 bls. mechanical pulp, 275 tons.
Lagerloef Trading Co., *Scanstates,* Helsingfors, 130 bls. sulphate, 26 tons.
M. Stone, *Birmania,* Trieste, 1,372 bls. wood pulp.

WOOD PULP BOARDS

H. Fuchs & Son, *Norefjord,* Gothenburg, 90 crates.
Jay Madden Corp., *Scanstates,* Kotka, 232 rolls, 75 tons.
Lagerloef Trading Co., *Scanstates,* Wiborg, 202 bls., 28 tons.

ALBANY IMPORTS

WEEK ENDING AUGUST 14, 1937

Perkins Goodwin & Co., *Dalhem,* Munksund, 3,000 bls. sulphate, 500 tons.
Johaneson Wales & Sparre, Inc., *Dalhem,* Obbola, 175 bls. sulphate, 25 tons.
Johaneson Wales & Sparre, Inc., *Dalhem,* Sundsvall, 3,530 bls. sulphite, 670 tons.
Johaneson Wales & Sparre, Inc., *Dalhem,* Sundsvall, 750 bls. sulphate, 125 tons.
Johaneson Wales & Sparre, Inc., *Dalhem,* Sundsvall, 1,000 bls. chemical pulp, 200 tons.
Perkins Goodwin & Co., *Dalhem,* Sundsvall, 3,000 bls. sulphate, 500 tons.
Bulkley Dunton Pulp Co., *Dalhem,* ——, 1,125 bls. sulphite, 225 tons.
Pagel Horton & Co. Inc., *Toledo,* Hernosand, 500 bls. sulphate, 17,500 bls. sulphite.
——, *Toledo,* Hernosand, 1,200 bls. sulphate, 375 bls. sulphite.
Brown Bros. Harriman & Co., *Toledo,* Hernosand, 1,350 bls. sulphite.
Tradesmans National Bank Trust Co., *Toledo,* Hernosand, 4,250 bls. sulphate.
Brown Bros. Harriman & Co., *Toledo,* Hernosand, 1,812 bls. chemical pulp.
Pagel Horton & Co. Inc., *Toledo,* Hernosand, 6,750 bls. sulphite.
Bank of N. Y. Trust Co., *Toledo,* Hernosand, 4,200 bls. sulphate, 2,550 bls. kraft pulp.
Price & Pierce, Ltd., *Toledo,* Hernosand, 150 bls. sulphate.
——, *Torny,* Gaspe, Que., 1,500 cords pulpwood.

PORTLAND IMPORTS

WEEK ENDING AUGUST 14, 1937

Gottesman & Co. Inc., *Bockenheim,* Sweden, 1,200 bls. wood pulp.
Price & Pierce, Ltd., *Bockenheim,* ——, 2,952 bls. unbleached sulphite.
Price & Pierce, Ltd., *Bockenheim,* ——, 4,680 bls. unbleached sulphate.

NEWARK IMPORTS

WEEK ENDING AUGUST 14, 1937

H. G. Craig Co., *Newscarrier,* Donnacona, 323 rolls newsprint.
H. G. Craig Co., *Donpaco,* Donnacona, 313 rolls newsprint.

BOSTON IMPORTS

WEEK ENDING AUGUST 14, 1937

Perkins Goodwin & Co., *Norefjord,* Gothenburg, 3,726 bls. sulphate.
Perkins Goodwin & Co., *Norefjord,* Gothenburg, 750 bls. chemical pulp, 60 bls. sulphite, 299 bls. kraft soda.
J. Andersen & Co., *Norefjord,* Gothenburg, 3,500 bls. sulphite.
Johaneson Wales & Sparre, Inc., *Norefjord,* Gothenburg, 299 bls. kraft soda.
The Borregaard Co. Inc., *Norefjord,* Gothenburg, 600 bls. chemical pulp.
H. Fuchs & Son, *Norefjord,* Gothenburg, 128 crates pulp boards.
Leigh Textile Co., *American Shipper,* Manchester, 212 bls. cotton waste.
Ayres W. C. Jones Co., *American Shipper,* Manchester, 39 bls. cotton waste.
D. C. Andrews & Co., *American Shipper,* Manchester, 79 bls. cotton waste.
E. J. Keller Co. Inc., *Black Eagle,* ——, 127 bls. bagging.
International Purchasing Co., *Black Eagle,* Rotterdam, 53 coils old rope.
Spaulding & Tewksbury, *Black Eagle,* Rotterdam, 153 bls. wood pulp, 39 tons.
American Express Co., *Black Eagle,* Antwerp, 234 rolls wrapping paper.
Irving Trust Co., *Black Eagle,* Antwerp, 54 bls. bagging.
International Purchasing Co., *Black Eagle,* Antwerp, 60 coils old rope.
——, *Black Eagle,* Antwerp, 27 bls. rags.
Royal Manufacturing Co., *Black Eagle,* Antwerp, 26 bls. cotton waste.
Guaranty Trust Co., *Alberta,* Trieste, 360 bls. wood pulp.
——, *Alberta,* Trieste, 717 bls. wood pulp.
——, *Alberta,* Trieste, 150 bags hide glue.
M. Sone, *Birmania,* Trieste, 440 bls. wood pulp.
Gottesman & Co. Inc., *Tampa,* Sweden, 1,250 bls. wood pulp.
Price & Pierce, Ltd., *Bockenheim,* ——, 4,962 bls. unbleached sulphite.
Price & Pierce, Ltd., *Bockenheim,* ——, 2,832 bls. unbleached sulphate.
Price & Pierce, Ltd., *Bockenheim,* 250 bls. unbleached mechanical pulp.
Price & Pierce, Ltd., *Tampa,* ——, 500 bls. bleached sulphite.
Parsons & Whittemore, Inc., *Konigsberg,* ——, 1,100 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING AUGUST 14, 1937

Castle & Overton, Inc., *Collamer,* St. Nazaire, 19 bls. rags.
Castle & Overton, Inc., *Collamer,* Bordeaux, 414 bls. rags.
Castle & Overton, Inc., *Collamer,* Havre, 231 bls. rags.
Strawbridge & Clothier, *Collamer,* Havre, 4 cs. writing paper.
Lagerloef Trading Co., *Scanstates,* Wiborg, 2,630 bls. sulphite, 495 tons.
Castle & Overton, Inc., *Scanstates,* Wiborg, 1,015 bls. wood pulp, 201 tons.
——, *Scanstates,* Stockholm, 519 bdls. wall board.
F. Whitaker Co., *Scanstates,* Copenhagen, 3 bls. rags.

Jay Madden Corp., *Scanstates,* Kotka, 47 rolls wood pulp boards, 19 tons.
Wilkinson Bros. & Co. Inc., *Scanstates,* Kotka, 62 rolls newsprint.
J. W. Hampton Jr. & Co., *Scanstates,* Kotka, 816 rolls newsprint.
M. Sone, *Konigsberg,* Hamburg, 1,344 bls. wood pulp.

CAMDEN IMPORTS

WEEK ENDING AUGUST 14, 1937

Lagerloef Trading Co., *Scanstates,* Wiborg, 4,318 bls. sulphate, 863 tons.

BALTIMORE IMPORTS

WEEK ENDING AUGUST 14, 1937

Johaneson Wales & Sparre, Inc., *Dalhem,* Sundsvall, 875 bls. sulphite, 175 tons.
Perkins Goodwin & Co., *Dalhem,* Sundsvall, 4,050 bls. sulphite, 675 tons.
Perkins Goodwin & Co., *Batory,* Gdynia, 1,950 bls. wood pulp, 301 tons.
Congoleum Nairn Co., *Collamer,* Havre, 46 bls. rags.
Congoleum Nairn Co., *Collamer,* St. Nazaire, 41 bls. rags.
Tradesmans National Bank Trust Co., *City of Fairbury,* Norrsundet, 2,550 bls. sulphate, 576 tons.
Price & Pierce, Ltd., *City of Fairbury,* Wallvik, 4,428 bls. sulphate.
Price & Pierce, Ltd., *City of Fairbury,* Wallvik, 2,856 bls. sulphite.
Central Hanover Bank Trust Co., *City of Fairbury,* Iggesund, 625 bls. sulphite, 125 tons.
Central Hanover Bank Trust Co., *City of Fairbury,* Iggesund, 5,625 bls. sulphate, 1,125 tons.
Central Hanover Bank Trust Co., *City of Fairbury,* Hernosand, 1,500 bls. sulphite, 250 tons.
M. Sone, *Brosund,* Sundsvall, 1,800 bls. wood pulp.
Gottesman & Co. Inc., *Brosund,* Sweden, 2,100 bls. wood pulp.
Parsons & Whittemore, Inc., *City of Baltimore,* ——, 1,330 bls. wood pulp.
Parsons & Whittemore, Inc., *City of Hamburg,* ——, 558 bls. wood pulp.
Price & Pierce, Ltd., *Brosund,* ——, 3,900 bls. unbleached sulphite.
Price & Pierce, Ltd., *Brosund,* ——, 150 bls. unbleached sulphate.
Price & Pierce, Ltd., *Brosund,* ——, 3,000 bls. unbleached mechanical pulp.
M. Sone, *City of Baltimore,* Hamburg, 83 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING AUGUST 14, 1937

National City Bank, *Grete Maersk,* Kobe, 400 bls. bagging.
Gottesman & Co. Inc., *Brosund,* Sweden, 5,600 bls. wood pulp.

NEW ORLEANS IMPORTS

WEEK ENDING AUGUST 14, 1937

Mente & Co., *Silverbeech,* Bombay, 87 bls. rags.

NEWPORT NEWS IMPORTS

WEEK ENDING AUGUST 14, 1937

Stora Kopparberg Corp., *City of Fairbury,* Gefle, 400 bls. dry pulp, 51 tons.
Central Hanover Bank Trust Co., *City of Fairbury,* Gefle, 2,000 bls. sulphite, 203 tons.
Brown Bros. Harriman & Co., *City of Fairbury,* Gefle, 500 bls. sulphite, 50 tons.
Price & Pierce, Ltd., *City of Fairbury,* Gefle, 3,720 bls. sulphite, 472 tons.
Price & Pierce, Ltd., *City of Fairbury,* Wallvik, 2,490 bls. sulphite.
——, *City of Fairbury,* Iggesund, 2,000 bls. sulphate, 400 tons.

MONTREAL IMPORTS

WEEK ENDING AUGUST 14, 1937

Gottesman & Co. Inc., *Idefjord,* Sweden, 18,600 bls. wood pulp.
M. Sone, *Frankfurt,* Hamburg, 2,820 bls. wood pulp.

Turbine Pumps for the Industry

Turbine pumps are described and illustrated in **Bulletin 260-B11C just issued by** Roots-Connersville Blower Corporation, of Connersville, Ind. Special emphasis is placed on their wide application throughout the industrial field.

Cutaway views are presented in the center spread showing the various types of construction, and the accompanying text discusses the numerous exclusive features shown by the cuts. Type 'T' pumps are offered in bronze-fitted, Tempaloy-fitted, all-iron, and all-Tempaloy bronze, but special pumps of Monel, stainless steel, etc., can also be supplied.

Another section of the bulletin is devoted to showing the various types of drives to which these turbine pumps are adaptable, the manufacturer claiming that they may be installed in any position.

A detailed selection table is included, with a brief discussion of the various factors entering into proper selection. Type TA-87 and TA-95 pumps cover a range of 5 to 175 GPM, at heads up to 500 feet, while Type TA-145 (self-priming) covers a range of 2½ to 40 GPM at heads up to 250 feet. A supplemental table, Form E11F, carrying the heads up to 700 feet, is available on request.

While Roots-Connersville is known internationally as the pioneer of rotary positive blowers, it also has a background of more than fifty years' experience in the liquid pumping field.

Defer Opening Chicoutimi Mill

MONTREAL, Que., August 16, 1937—While efforts have been made by the Quebec Government to secure the re-opening of the Chicoutimi pulp mill of the Quebec Pulp and Paper Corporation, which has a capacity of 600,000 lbs. of dry ground woodpulp per day, it is stated that although the price of mechanical pulp, market conditions are still not favorable to the introduction of any large amount of new capital into the mill as a groundwood proposition, and that a sulphite pulp mill would be more attractive. Whether or not plans for the latter will be put forward remains to be seen.

I. P. Plan Effective Sept. 25

R. J. Cullen, president of International Paper and Power Company, announced that the company's board of directors has taken final action to put into effect the plan for change in capitalization. No further action by the company is required.

The date on which the now outstanding shares are changed in accordance with the plan has been fixed by the board as September 25, 1937, or such earlier date as the registrations under the Securities Exchange Act of 1934 shall become effective.

New Morse Data Book

The Morse Chain Company of Ithaca, N. Y., announces its 1937 Silent Chain Engineering Data Book for the use of plant engineers and production men. Among other items, the booklet contains horse-power tables, explanation of the Morse Silent Chains, layouts of typical shoes and idlers, sprocket data, directions for cutting sprockets, how to calculate chain length, special sprockets and their uses, chain cases and methods of oiling.

The booklet is free, and may be obtained by writing to the Morse Chain Company, Ithaca, N. Y.

Modern Paper-Conditioning Methods and the Paper Hygroscope*

The Paper Hygroscope is a sword-shaped instrument which indicates whether or not a given paper will change in dimenisons when printed in the existing pressroom atmosphere. Near the tip of its blade is a moisture-sensitive element which actuates the pointer on a dial at the hilt. The blade is simply inserted in a pile of paper, and the movement of the pointer indicates whether the paper is too moist, too dry, or within the limits necessary for good register.

The Paper Hygroscope was first placed on the market in 1931, after extensive experiments both in the laboratory and in lithographic plants proved its value in the prevention of register troubles. A large number of Paper Hygroscopes have been in continuous use since that time, and considerable practical experience in their operation has been gained. The research on lithographic papers at the National Bureau of Standards has also brought to light some new facts with regard to the handling and conditioning of paper. Technical Bulletin No. 1 is issued with the object of providing up-to-date information on the value and uses of the Paper Hygroscope.

Properties of Paper

The most important factors which affect the properties of a given paper are (1) its moisture content, and (2) the relative humidity of the surrounding atmosphere. Paper is hygroscopic, and its moisture content tends to approach a balance with the surrounding atmosphere. Strange to say, its moisture content, when equilibrium with a given atmosphere is reached, is not always the same, but depends on whether the paper gains or loses moisture as it approaches the balance. Very dry paper, conditioned to equilibrium in an atmosphere of 45 per cent relative humidity, may contain as little at 4.8 or 4.9 per cent moisture. The same paper, if moist at the start, may contain as much as 5.6 or 5.7 per cent moisture. Further conditioning will not change these values as long as the atmosphere remains the same.

Temperature has some effect on the moisture content when the paper is "in balance" with the atmosphere. Ordinarily, the higher the temperature, the lower will be the moisture content of the paper, but it requires a rise in temperature of about 30 degs. F. to lower the moisture content as much as a decrease of 5 per cent in relative humidity.

All that has been said applies to single sheets of paper that can adapt themselves readily and uniformly to atmospheric changes. Piles of paper, however, cannot do this and hence are subject to changes in moisture content at the exposed surfaces only. These changes result in non-uniform expansion or contraction of the sheets with the result that their flatness is destroyed.

Paper Conditioning

Paper is "hung" or conditioned by lithographers with the object of eliminating any tendency to expand, contract, or develop wavy edges during printing. However, it has been found that the usual methods of paper conditioning, even in air-conditioned plants, fail to accomplish the desired purpose. Two definite reasons for this failure have been brought out by the work of the National Bureau of Standards in its studies of offset papers.[1]

1—The conditioning of paper is seldom complete, and expansion or contraction continues to take place during printing.

2—Paper, being usually conditioned from the dry side by addition of moisture, has a low equilibrium moisture content, and can readily absorb the press moisture during printing, with resultant expansion.

It was found that, to be in the best condtion for printing, the paper should either be conditioned to equilibrium with the press-room atmosphere from the moist side, or it should be conditioned from the dry side to equilibrium with an atmosphere 5 to 8 per cent higher in relative humidity than the press-room atmosphere.

Thus conditioned, paper will contain about one-half per cent more moisture than if it were conditioned from the dry side in the usual way, and it will have no capacity to absorb the press moisture. Any moisture transmitted to the surface of the paper will evaporate completely before the sheet reaches the delivery pile. Stretching of the paper during printing is therefore greatly reduced and flatness of the sheet is maintained with beneficial effects on register.

Very satisfactory results are obtained with the new methods of paper conditioning in plants that have complete temperature and humidity control. In plants that are not air-conditioned a considerable improvement can be made through the use of these methods, but they do not offer a complete solution of the register problem. In the latter case the improvement is due to a decreased susceptibility of the paper to expansion and the development of wavy edges.

Where the Paper Hygroscope Helps

No method of paper conditioning can be operated successfully by rule-of-thumb. Too many factors enter into the process. Modern production methods require not only practical knowledge but also a certain amount of technical control.

The Paper Hygroscope provides the means for technical control in paper conditioning. It is designed to measure any difference that may exist between the hygrometric condition of the paper and that of the pressroom atmosphere. The Paper Hygroscope is first allowed to become adjusted to the atmosphere and then its blade is simply inserted

* Synopsis of Technical Bulletin No. 1, of the Lithographic Technical Foundation, Inc., 220 East 42nd street, New York.

[1] See Bureau of Standards Research Paper No. 859, "Treatment of Offset Papers for Optimum Register," by C. G. Weber and M. N. V. Geib. This pamphlet may be obtained from the Lithographic Technical Foundation, Inc., 220 E. 42nd street, New York City.

(Continued on page 54)

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, August 18, 1937.

A good volume of paper is moving, with prices holding firm. Book papers are in considerable demand, with bonds, ledgers and book covers in fair call. Business in fancy papers for box coverings continues good.

Newsprint remains as active as usual, with shipments in normal volume. In the wrapping paper division, moderate-sized sales are being made. Summer specialties are lively.

Box board is rather slow, but firm, with a general pickup expected in the not far distant future.

Chemical Pulp

Trading in the chemical pulp market continues at a slow pace. Yet the demand for bleached sulphite is distinctly more animated than the market in general, with buyers contracting for any tonnage capable of being purchased at approximately normal prices.

Mechanical Pulp

The tenor of the mechanical pulp market is steady and in many instances users are buying much ahead of present needs. Such a condition may indicate that buyers are fearing a situation comparable to that which has existed in the chemical market for quite some time.

Old Rope and Bagging

Demand for old rope continues to be limited. The condition of foreign and domestic manila is steady. Trading in the scrap and bagging market is firm, although some dealers and importers are buying within certain price ranges, in expectation of a greater consumer demand very shortly.

Rags

The domestic market was fairly firm this past week, although a rising tendency seems to have been exhibited in the roofing grades. In general, however, prices complied with previous schedules.

Waste Paper

The waste paper market showed a continued upturn of demand in both the better and board grades. Prices were generally firm, but the established market levels for mixed paper and folded news advanced.

Twine

Twines continue active, with a normal demand for sisal, jute and hemp. Prices remain firm. In cotton, the situation has improved, with the price of raw cotton pegged, so that the twine market has been stabilized.

To Start Rushmore Mills January 1

GOUVERNEUR, N. Y., August 16, 1937—The Rushmore Paper Mills, Inc., is planning to have its plant at Natural Dam rebuilt and in operation by January 1, 1938, according to a statement of James C. Wemyss of Gouverneur, superintendent of the paper mill which was destroyed by fire on May 5.

Mr. Wemyss, a nephew of James S. Wemyss of Lancashire, N. H., president of the company, stated that the company is now hiring mechanics and carpenters, and is prepared to go ahead with the rebuilding of the mill as fast as possible. Some repairs already have been made, including repairs to the boiler room and the building of a new roof over the machine room.

The finishing plant, which was completely destroyed, will be rebuilt, and will be a two-story building in place of the one-story structure which burned. New machinery will be installed.

Hammermill Agents to Meet August 26-27

The Twenty-sixth Annual Conference of the Agents of the Hammermill Paper Co. will be held at Erie this year Thursday and Friday, August 26 and 27. As for many years past, the registration of guests as well as the business sessions and social activities will be at the Kahkwa Club.

MODERN PAPER CONDITIONING

(Continued from page 52)

in the pile of paper. After one minute the position of the pointer indicates whether the paper is too dry, too moist, or within the limits for good register. The degree of dryness or wetness of the paper corresponding to a given deflection of the pointer is shown in a table in the instructions. If the relative humidity of the atmosphere is known, another table gives the approximate moisture content of the paper.

Thus it is possible in purchasing paper to specify such a moisture content that it will require no hanging whatever before printing. Upon arrival, the paper can be tested with the Paper Hygroscope, and rejected if the moisture content is not up to specification. If paper is purchased without a moisture content specification, and is conditioned in the lithographic plant, the Paper Hygroscope enables the operator to know when conditioning is complete, and thus eliminates much guesswork and many unaccountable difficulties in printing.

Technical Bulletin No. 1 describes the newer methods of paper conditioning which provide the one-half per cent excess of moisture necessary for trouble-free printing. An illustration shows the relation of the paper condition, as indicated by the Paper Hygroscope reading, to the accuracy of the register obtained on a seven-color job.

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Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, August 18, 1937.

BLANC FIXE — Trading in the blanc fixe market is almost at a standstill. Prices have shown no alteration. Pulp is offered at from $42.50 to $45 per ton, in bulk, while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER — Bleaching powder is strong, which conforms with the usual condition manifested this time of the year. The contract movement is normal. Prices are similar to previously quoted levels. Bleaching powder is offered at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN — The condition of the casein market is firm. Domestic standard ground casein is selling at from 13 to 14 cents per pound, while domestic finely ground casein is quoted at from 13½ to 14½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA — The caustic soda market is steady. The contract movement is regular. Solid caustic soda is quoted at from $2.10 to $2.30, while flake and ground is selling from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY — The condition of the china clay market is active. Contract shipments are moving at a fairly quick pace. Imported china clay is quoted at from $14.50 to $25 per ton, ship side, while domestic paper making clay is selling at from $6.50 to $12 per ton, at works.

CHLORINE — Trading in the chlorine market is active. The contract movement is lively. Prices comply with previously quoted levels. Chlorine is selling at $2.15 per 100 pounds, in single-unit tank cars, f.o.b., at works.

ROSIN — The rosin market is steady. Prices are the same as formerly quoted levels. Paper making rosin is selling at $7.80 and wood rosin at $7.90 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is now quoted at $3.60 per 100 pounds, in tank cars, at works.

SALT CAKE — Trading in the salt cake market is steady. Salt cake is quoted at from $12 to $13; chrome salt cake at from $10 to $11, f.o.b. shipping point, while imported salt cake is selling at $12, Gulf or Atlantic Seaboard, on dock.

SODA ASH — The soda ash market is active. Demand from the paper mills continues to be large. Prices are maintained at formerly quoted levels. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $.90; in bags, $1.05; and in barrels, $1.35.

STARCH — The starch market is quiet, with prices remaining at the newly quoted levels. Paper making starch is quoted at $3.45 per 100 pounds, in bags, and at $3.70 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA — The sulphate of alumina market shows strength. Contract shipments are moving well. Prices are firm. Commercial grades are quoted at from $1.25 to $1.60, while iron free is selling at from $2 to $2.25 per 100 pounds, in barrels, at works.

SULPHUR — The condition of the sulphur market continues steady. Yearly contracts are quoted at $18 per long ton on orders of 1,000 tons or over. On spot and nearby car loads the quotation is $21 per ton. All quotations are in car lots, at works.

TALC — The talc market continues normal. Prices conform with previous market levels. Domestic talc is quoted at from $15 to $18 per ton, at eastern mines, while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

Tissues—Per Ream—

White No. 1	1.10	@	—
White No. 1 M. G.	1.07½	@	—
White No. 1½	.77½	@	—
White No. 2	.75	@	—
Anti-Tarnish M. G.	.77½	@	—
Colored	.90	@	—
Kraft	.77½	@	—
Manila	.75	@	—
Unbleached Toilet	2.60	@	3.30
Bleached Toilet	3.94	@	5.26

Paper Towels—

Unbleached	2.10	@	3.35
Bleached	3.30	@	3.70

Manila—

No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00

Fibre Papers—

No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75

(Delivered New York)

News, per ton—

Roll, contract	42.50	@	—
Sheets	47.50	@	—

Kraft—

No. 1 Northern	5.25	@	5.75
Standard	5.00	@	—
Southern	5.00	@	—
Glazed	4.50	@	—
Striped	4.75	@	—

Boards, per ton—

News	47.50	@	—
Chip	45.00	@	—
Sgl. Mla. Ll. Chip	55.00	@	—
Jute Lined Chip	55.00	@	—
Kraft Liners	65.00	@	—
White Pat. Coated	67.50	@	—
Binders Boards	75.00	@	80.00

The following are representative of distributors' resale prices:—

Rag Content Bonds and Ledgers—
White, Assorted Items.
Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext.	No. 1. $41.40@$48.50	$42.55@$50.00
100% Rag	32.80@ 38.50	33.95@ 39.75
85% Rag		32.20@ 37.75
75% Rag	24.75@ 29.00	25.90@ 30.50
65% Rag	21.65@ 26.25	22.80@ 27.75
50% Rag	18.70@ 22.75	19.90@ 24.25
25% Rag	15.80@ 19.25	16.95@ 20.75

Regular Colors @ $1.50 cwt. extra.
Heavy Colors @ $3.00 cwt. extra

Sulphite Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$9.35@$11.50	$10.55@$12.75
No. 2	8.50@ 10.25	9.65@ 11.75
No. 4	7.60@ 9.25	8.80@ 10.75

Regular Colors @ $1.50 cwt. extra.
Heavy Colors @ $3.00 cwt. extra.

Free Sheet Book Papers—
White, Cased Paper,
Delivered in Zone 1:

No. 1 Glossy Coated	$12.45	@	$14.25
No. 2 Glossy Coated	10.80	@	12.25
No. 3 Glossy Coated	9.65	@	11.00
No. 4 Glossy Coated	9.05	@	10.50
No. 1 Antique (watermarked)	9.05	@	10.50
No. 2 Offset	8.35	@	9.50
A Grade E. F.	8.20	@	9.50
A Grade S. & S. C.	8.45	@	9.75
B Grade E. F.	7.60	@	8.75
B Grade S. & S. C.	7.85	@	9.00
C Grade E. F.	7.30	@	8.50
C Grade S. & S. C.	7.55	@	8.75
D Grade E. F.	7.00	@	8.25
D Grade S. & S. C.	7.25	@	8.50

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	35.00	@	36.00
Dry	40.00	@	42.00

(Delivered)

No. 1 Domestic and Canadian	36.00	@	37.50

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.25	@	4.65
Prime Qualities—			
Easy-Bleaching Sulphite	3.50	@	4.00
Strong Unbleached Sulphite	3.25	@	3.65

(On Dock, Atlantic Ports)

Kraft Bleached	4.00	@	4.75
Kraft Light & Strong	3.00	@	3.75
Kraft No. 1	2.90	@	3.65
Kraft No. 2	2.50	@	2.75

(F.o.b. Pulp Mill)

Kraft Domestic	2.75	@	3.25

(Delivered)

Soda Bleached	3.15	@	—

Add 60 cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	9.00	@	9.25
Silesias, No. 1	6.75	@	7.00
New Unbleached	9.25	@	9.50
Blue Overall	7.25	@	7.50
Fancy	3.75	@	4.25
Washables	2.75	@	3.25
Mixed Khaki Cuttings	4.25	@	4.50
O. D. Khaki Cuttings	4.75	@	5.00

Old Rags

White, No. 1—			
Repacked	3.75	@	4.25
Miscellaneous	3.00	@	3.25
White, No. 2—			
Repacked	2.60	@	2.85
Miscellaneous	2.00	@	2.25
Thirds and Blues—			
Repacked	2.00	@	2.25
Miscellaneous	1.90	@	2.00
Roofing Rags—			
No. 1	Nominal		
No. 2	1.20	@	1.30
No. 3 (bagging)	.90	@	1.00
No. 4	.90	@	1.00
No. 5A	.75	@	.85

Foreign Rags

New Rags

New Dark Cuttings	Nominal
New Mixed Cuttings	Nominal
New Light Silesias	Nominal
Light Flannelettes	Nominal
New White Cuttings	Nominal
New Light Oxfords	Nominal
New Light Prints	Nominal

Old Rags

No. 1 White Linens	Nominal
No. 2 White Linens	Nominal
No. 3 White Linens	Nominal

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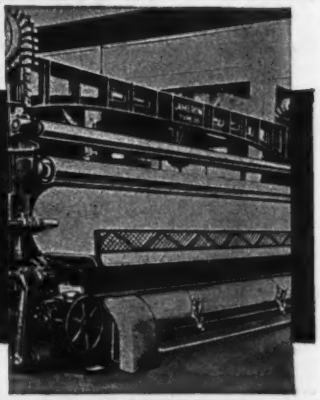

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No. 4 White Linens	Nominal
No. 1 White Cotton	Nominal
No. 2 White Cotton	Nominal
No. 3 White Cotton	Nominal
No. 4 White Cotton	Nominal
Extra Light Prints	Nominal
Ord. Light Prints	Nominal
Med. Light Prints	Nominal
Dutch Blue Cottons	Nominal
French Blue Linens	Nominal
German Blue Linens	Nominal
German Blue Cottons	Nominal
Checks and Blues	Nominal
Linsey Garments	Nominal
Dark Cottons	Nominal
Old Shopperies	Nominal
New Shopperies	Nominal
French Blues	Nominal

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.25	@	2.35
Domestic	2.15	@	2.25
Wool Tares, light	1.75	@	1.85
Wool Tares, heavy	2.20	@	2.35
Bright Bagging	1.70	@	1.75
Manila Rope—			
Foreign	4.75	@	5.00
Domestic	5.00	@	5.25
Jute Strings	2.75	@	3.00
Sisal Strings	2.60	@	2.75
Mixed Strings	Nominal		

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.10	@	3.25
Ordinary Hard White No. 1	2.60	@	2.70
Hard White No. 2	2.40	@	2.50
Soft White No. 1	2.30	@	2.40
Flat Stock—			
Stitchless	1.25	@	1.35
Overissue Mag	1.25	@	1.35
Solid Flat Book	.95	@	1.05
Crumbled No. 1	.85	@	.95
Ledger Stock	1.30	@	1.35
New B. B. Chips	.35	@	.40
Manila—			
New Env. Cut	2.15	@	2.25
New Cuttings	1.65	@	1.75
Old Kraft Machine—			
Compressed bales	1.55	@	1.65
News—			
No. 1 White News	1.45	@	1.55
Strictly Overissue	.65	@	.75
Strictly Folded	.42½	@	.47½
No. 1 Mixed Paper	.40	@	.45

Twines

(F. o. b. Mill)

(Soft Fibre)			
Coarse Polished—			
India	.16	@	.18½
Belg. White Hemp	.17	@	.20½
India Compress	.16½	@	.17
Fine Polished—			
Fine India	.22	@	.24
Unpolished—			
Box	.11¾	@	.12¼
Paper Makers	.11½	@	.13¾
Tube Rope	.12½	@	.15¼
Wall Paper	.13½	@	.14¼
Wrapping	.17	@	.21
Soft Fiber Rope	.15¼	@	—
(Hard Fibre)			
Bond	.13½	@	.14
Anchor	.13	@	.14
Manila	.31	@	.28
Domestic	4.25	@	4.50
Transmission Rope	2.00	@	2.25
Jute Rope	1.85	@	2.12½
Soft Jute Strings	2.00	@	2.50
Jute Carpet Threads	1.75	@	2.00
Gunny No. 1			
Foreign	2.35	@	2.40
Domestic	2.00	@	2.10
Bleachery Burlap	4.00	@	4.25
Scrap Burlap—			
Foreign	2.15	@	2.25
Domestic	1.75	@	1.85
Scrap Sisal	2.35	@	2.40
Scrap Sisal for Shredding	2.50	@	—
Wool Tares, heavy	—	@	2.25
New Burlap Cuttings	2.45	@	3.00
Aust. wool pouches	3.00	@	3.25
Heavy bailing bagging	2.40	@	2.60
Paper Mill Bagging	1.70	@	1.75
Bagging No. 2	.80	@	.90

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.03½	@	.03¾
New White No. 1	.08½	@	.08¾
New White No. 2	.06	@	.06½
New Light Flannelettes	—	@	.06½
Silesias No.	—	@	.06½
New Black Silesias	.04¼	@	.04½
Soft Unbleached	.09¼	@	.09½
Blue Cheviot	.07¼	@	.07½
Fancy	.03¾	@	.04
Washable	.03	@	.03¼
Kraft, M. F.	6.00	@	—
Cottons—According to grades—			
Blue Overalls	.07	@	.07¼
New Black, soft	.04¼	@	.04½
Khaki Cuttings	.04½	@	.04¾
O. D. Khaki	.04¾	@	.05
Corduroy	.03¼	@	.03½
New Canvas	.07¾	@	.08¼
B.V.D. Cuttings	.08¾	@	.09

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.75	@	2.00
Third and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings	3.90	@	4.00
Roofing Stock—			
No. 1	—	@	1.20
No. 2	1.10	@	1.15
No. 3	.90	@	1.00

Foreign Rags

(F. o. b. Boston)

Dark Cottons	1.65	@	1.85
Dutch Blues	3.00	@	3.15
New Checks and Blues	2.85	@	3.00
Old Fustians	2.50	@	2.75
Old Linsey Garments	2.10	@	2.25
New Silesias	6.50	@	7.00

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.08	@	.08¼
New White, No. 2	.04½	@	.05
Light Silesias	.05½	@	—
Silesias, No. 1	—	@	.05½
Black Silesias, soft	.03½	@	.04
New Unbleached	.08¼	@	.08¾
Washable, No. 1	.02	@	.02¼
Blue Overall	.06	@	.06¾
Cottons—According to grades—			
Washable, No. 2	.01½	@	.01¾
New Blue	.01¾	@	.02
Fancy Percales	.03	@	—
New Black Soft	.03	@	.03½
New Light Seconds	—	@	.05½
New Dark Seconds	1.25	@	1.50
Khaki Cuttings—			
No. 1 O. D.	.04	@	.04½
No. 2 Mixed	—	@	.03
Corduroy	.02¼	@	.03
New Canvas	.06½	@	.07
New Black Mixed	.02	@	.02¼

Domestic Rags (Old)

White No. 1—			
Repacked	—	@	3.00
Miscellaneous	2.50	@	2.75
Thirds and Blues—			
Miscellaneous	2.00	@	2.25
Repacked	2.25	@	2.50
Black Stockings (Export)	4.50	@	5.00
Roofing Stock—			
Foreign No. 1	1.50	@	1.75
Domestic No. 1	2.00	@	2.10
Domestic No. 2	1.90	@	2.00
Roofing Bagging	1.75	@	—

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	—	@	1.80
Domestic	—	@	2.00
Manila Rope	3.00	@	3.50
Sisal Rope	2.50	@	—
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.60	@	1.75
No. 2	.90	@	1.00
Wool Tares, heavy	3.25	@	3.50
Mixed Strings	1.00	@	1.10
No. 1 New Light Burlap	3.00	@	3.50
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	—	@	2.60
No. 2 Hard White	2.20	@	2.25
No. 1 Soft White	2.25	@	2.30
No. 2 Soft White	1.75	@	—
No. 1 Mixed	—	@	.85
Solid Ledger Stock	—	@	1.75
Ledger Stock, white	1.75	@	—
Ledger Stock, colored	1.50	@	—
No. 1 Books, heavy	1.10	@	1.15
Manila Cuttings	1.80	@	1.90
Print Manila	.70	@	.75
Container Manila	.65	@	—
Kraft Paper	1.75	@	—
No. 1 Mixed Paper	.40	@	.45
Straw Board Chip	.50	@	—
Binders Board Chip	.50	@	—
Corrugated Board	.65	@	.70
Overissue News	.70	@	.75
Old Newspapers	.55	@	.60

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.20	@	2.35
No. 1 Soft White	1.85	@	2.15
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.50	@	1.75
Overissue Ledger Stock	1.30	@	1.50
Mixed Ldgers	.85	@	.90
No. 1 Books, heavy	1.00	@	1.10
No. 1 Books, light	.65	@	.75
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.60	@	1.70
Manila Env. Cuttings, extra quality	2.20	@	2.30
No. 1 Old Manila	.95	@	1.00
White Blank News	1.30	@	1.40
No. 1 Kraft	1.75	@	—
Mixed Papers	.40	@	.45
Print Manila	.65	@	.70
Container Manilas	.27½	@	—
Old Newspapers	.50	@	.55
Overissue News	.50	@	.65
Box Board Chips	.35	@	.40
Corrugated Boxes	.60	@	.65
Kraft corrugated boxes	1.20	@	1.22½
Screening Wrappers	.60	@	.65

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	4.00	@	4.25

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings	3.30	@	3.40
No. 1 Hard White	2.60	@	2.70
No. 1 Soft White	2.10	@	2.15
Ledger & Writings	1.40	@	1.50
Solid Books	1.25	@	1.30
Blanks	1.50	@	1.65
Krafts	1.00	@	1.25
New Kraft Cuts	1.80	@	2.00
Manila Env. Cuts	2.20	@	2.35
Ex. No. 1 Manila	2.20	@	2.35
Print Manila	1.70	@	1.80
Overissue News	.80	@	.90
Old Newspapers—			
No. 1 Folded News	.80	@	.90
No. 1 Mixed Paper	.80	@	.90
Roofing Stocks—			
No. 1	2.00	@	2.21
No. 2	1.85	@	2.06

TORONTO

Paper

Bonds and Ledgers

Delivered

No. 1 White	.35½	@	.36½
No. 1 Tints	.36½	@	.37½
No. 2 White	.26½	@	—
No. 2 Tints	.27½	@	—
No. 4 White	.15	@	.1550
No. 4 Tints	.16	@	.1650
No. 5 Bond—White	11.35	@	—
No. 5 Bond—Tints	12.35	@	—
No. 5 Bond—Golden Rod	13.35	@	—
No. 5 Ledger—White	.11½	@	—
No. 5 Ledger—Tints	.12	@	—
No. 6 Bond—White	10.75	@	—
No. 6 Bond—Tints	11.25	@	—
No. 6 Bond—Golden Rod	12.75	@	—
No. 7 Bond—White	9.10	@	—
No. 7 Bond—Tints	9.70	@	—
No. 7 Bond—Golden Rod	11.20	@	—
Book—			
No. 1 M. F.	7.10	@	7.35
No. 2 M. F.	6.85	@	7.20
No. 3 M. F.	5.60	@	6.20
No. 1 S. C.	7.60	@	7.85
No. 2 S. C.	7.00	@	7.35
No. 3 S. C.	6.10	@	6.35
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	11.00	@	—
No. 3 Coated and Litho	9.50	@	10.00
Coated tinted	13.00	@	13.50
Wrapping—delivered—			
Rag Brown	4.85	@	5.55
White Wrap	4.00	@	—
"B" Manila	4.90	@	6.25
No. 1 Manila	5.50	@	7.00
Fiber	5.50	@	—
Kraft, No. 2	5.50	@	—

(F. o. b. Cars, Toronto)

News, per ton—			
Rolls (contract)	38.50	@	—
Sheets	45.50	@	—

Pulp

Ground wood	32.00	@	—
Unbleached Sulphite	59.00	@	—
Book (Class 1)	71.00	@	—
Writing (Class 2)	72.00	@	—
Select (Class 3)	73.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.50	@	—
Soft White	2.15	@	—
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.00	@	—
Light and Crumpled Book Stock	.85	@	—
Ledgers and Writings	1.20	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	.65	@	—
Kraft	1.00	@	1.70
News and Scrap—			
Strictly Overissue	.65	@	—
Strictly Folded	.60	@	—
No. 1 Mixed Paper	.50	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09	@	.09¼
Fancy Shirt Cuttings	.03½	@	.03¾

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... MAP THE SLIMFORM TRAIL

Stock losses—bacterial decomposition and reworking of stock

Lowered Quality—slime spots—pin holes—objectionable odors

Increased Costs—in water—heat—labor—chemicals

Maintenance Troubles—blinded wires—plugged felts

Frequent Clean-ups—slime breaks—poor sheet formation

Obstruction of Lines—stock and white water lines

Recirculation Difficulties—slime growths in recirculated systems

Mechanical Strain on felts and wires—shortened useful felt and wire life

WHEN Slimform (slime forming bacilli) infest a paper mill, profits disappear. Not only lowered quality, but also increased production costs and actual loss in paper making materials result from paper mill slime. BUT—You can eliminate slime by the same method used in over 200 leading mills today. Controlled application of chlorine and ammonia will banish slime from your mill—and at a cost of not more than from 1½ cents to 6 cents per ton of product.

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